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# ACCOUNTING PRINCIPLES

THIRTEENTH EDITION

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# Accounting Principles

Thirteenth Edition

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This book was set in Stix Regular by Aptara®, Inc. and printed and bound by Quad Graphics/Versailles. The cover was printed by Quad Graphics/Versailles.

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ISBN-13: 978-1-119-41101-7

The inside back cover will contain printing identification and country of origin if omitted from this page. In addition, if the ISBN on the back cover differs from the ISBN on this page, the one on the back cover is correct.

Printed in America.

10 9 8 7 6 5 4 3 2 1

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Dear Student,

**WHY THIS COURSE?** Remember your biology course in high school? Did you have one of those "invisible man" models (or maybe something more high-tech than that) that gave you the opportunity to look "inside" the human body? This accounting course offers something similar. To understand a business, you have to understand the financial insides of a business organization. An accounting course will help you understand the essential financial components of businesses. Whether you are looking at a large multinational company like **Apple** or **Starbucks** or a single-owner software consulting business or coffee shop, knowing the fundamentals of accounting will help you understand what is happening. As an employee, a manager, an investor, a business owner, or a director of your own personal finances—any of which roles you will have at some point in your life—you will make better decisions for having taken this course.

"Whether you are looking at a large multinational company like **Apple** or **Starbucks** or a single-owner software consulting business or coffee shop, knowing the fundamentals of accounting will help you understand what is happening."

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Good luck in this course. We hope you enjoy the experience and that you put to good use throughout a lifetime of success the knowledge you obtain in this course. We are sure you will not be disappointed.

**Jerry J. Weygandt**
**Paul D. Kimmel**
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## Jerry Weygandt

**JERRY J. WEYGANDT, PhD, CPA**, is Arthur Andersen Alumni Emeritus Professor of Accounting at the University of Wisconsin—Madison. He holds a Ph.D. in accounting from the University of Illinois. Articles by Professor Weygandt have appeared in *The Accounting Review, Journal of Accounting Research, Accounting Horizons, Journal of Accountancy*, and other academic and professional journals. These articles have examined such financial reporting issues as accounting for price-level adjustments, pensions, convertible securities, stock option contracts, and interim reports. Professor Weygandt is author of other accounting and financial reporting books and is a member of the American Accounting Association, the American Institute of Certified Public Accountants, and the Wisconsin Society of Certified Public Accountants. He has served on numerous committees of the American Accounting Association and as a member of the editorial board of *The Accounting Review*; he also has served as President and Secretary-Treasurer of the American Accounting Association. In addition, he has been actively involved with the American Institute of Certified Public Accountants and has been a member of the Accounting Standards Executive Committee (AcSEC) of that organization. He has served on the FASB task force that examined the reporting issues related to accounting for income taxes and served as a trustee of the Financial Accounting Foundation. Professor Weygandt has received the Chancellor's Award for Excellence in Teaching and the Beta Gamma Sigma Dean's Teaching Award. He is on the board of directors of M & I Bank of Southern Wisconsin. He is the recipient of the Wisconsin Institute of CPA's Outstanding Educator's Award and the Lifetime Achievement Award. In 2001 he received the American Accounting Association's Outstanding Educator Award.

## Paul Kimmel

**PAUL D. KIMMEL, PhD, CPA**, received his bachelor's degree from the University of Minnesota and his doctorate in accounting from the University of Wisconsin. He teaches at the University of Wisconsin—Milwaukee, and has public accounting experience with Deloitte & Touche (Minneapolis). He was the recipient of the UWM School of Business Advisory Council Teaching Award, the Reggie Taite Excellence in Teaching Award and a three-time winner of the Outstanding Teaching Assistant Award at the University of Wisconsin. He is also a recipient of the Elijah Watts Sells Award for Honorary Distinction for his results on the CPA exam. He is a member of the American Accounting Association and the Institute of Management Accountants and has published articles in *The Accounting Review, Accounting Horizons, Advances in Management Accounting, Managerial Finance, Issues in Accounting Education, Journal of Accounting Education*, as well as other journals. His research interests include accounting for financial instruments and innovation in accounting education. He has published papers and given numerous talks on incorporating critical thinking into accounting education, and helped prepare a catalog of critical thinking resources for the Federated Schools of Accountancy.

## Don Kieso

**DONALD E. KIESO, PhD, CPA**, received his bachelor's degree from Aurora University and his doctorate in accounting from the University of Illinois. He has served as chairman of the Department of Accountancy and is currently the KPMG Emeritus Professor of Accountancy at Northern Illinois University. He has public accounting experience with Price Waterhouse & Co. (San Francisco and Chicago) and Arthur Andersen & Co. (Chicago) and research experience with the Research Division of the American Institute of Certified Public Accountants (New York). He has done post doctorate work as a Visiting Scholar at the University of California at Berkeley and is a recipient of NIU's Teaching Excellence Award and four Golden Apple Teaching Awards. Professor Kieso is the author of other accounting and business books and is a member of the American Accounting Association, the American Institute of Certified Public Accountants, and the Illinois CPA Society. He has served as a member of the Board of Directors of the Illinois CPA Society, then AACSB's Accounting Accreditation Committees, the State of Illinois Comptroller's Commission, as Secretary-Treasurer of the Federation of Schools of Accountancy, and as Secretary-Treasurer of the American Accounting Association. Professor Kieso is currently serving on the Board of Trustees and Executive Committee of Aurora University, as a member of the Board of Directors of Kishwaukee Community Hospital, and as Treasurer and Director of Valley West Community Hospital. From 1989 to 1993 he served as a charter member of the national Accounting Education Change Commission. He is the recipient of the Outstanding Accounting Educator Award from the Illinois CPA Society, the FSA's Joseph A. Silvoso Award of Merit, the NIU Foundation's Humanitarian Award for Service to Higher Education, a Distinguished Service Award from the Illinois CPA Society, and in 2003 an honorary doctorate from Aurora University.

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*Accounting Principles*, *Thirteenth Edition*, provides a simple and practical introduction to the fundamentals of accounting. It explains the concepts you need to know. This edition continues this approach by offering even more explanations, illustrations, and homework problems to help students get a firm understanding of the accounting cycle.

# DO IT! Exercises

DO IT! Exercises in the body of the text prompt students to stop and review key concepts. They outline the Action Plan necessary to complete the exercise as well as show a detailed solution.

**DO IT! 3 | Correcting Entries**

Sanchez Company discovered the following errors made in January 2020.

1. A payment of Salaries and Wages Expense of $600 was debited to Supplies and credited to Cash, both for $600.
2. A collection of $3,000 from a client on account was debited to Cash $200 and credited to Service Revenue $200.
3. The purchase of supplies on account for $860 was debited to Supplies $680 and credited to Accounts Payable $680.

Correct the errors without reversing the incorrect entry.

**ACTION PLAN**

- Compare the incorrect entry with correct entry.
- After comparison, make an entry to correct the accounts.

**Solution**

| | | | |
|---|---|---|---|
| 1. | Salaries and Wages Expense | 600 | |
| | Supplies | | 600 |
| 2. | Service Revenue | 200 | |
| | Cash | 2,800 | |
| | Accounts Receivable | | 3,000 |

# Review and Practice

Each chapter concludes with a Review and Practice section which includes a review of learning objectives, key terms glossary, practice multiple-choice questions with annotated solutions, practice brief exercises with solutions, practice exercises with solutions, and a practice problem with a solution.

**Practice Brief Exercises**

*Prepare the current assets section of a balance sheet.*

3. (LO 4) **Financial Statement** The balance sheet debit column of the worksheet for Miguel Company includes the following accounts: Accounts Receivable $25,000, Prepaid Insurance $7,000, Cash $8,000, Supplies $11,000, and Stock Investments (short-term) $14,000. Prepare the current assets section of the balance sheet, listing the accounts in proper sequence.

**Solution**

3.

**Miguel Company**
**Partial Balance Sheet**

| | |
|---|---|
| Current assets | |
| Cash | $ 8,000 |
| Stock investments | 14,000 |
| Accounts receivable | 25,000 |
| Supplies | 11,000 |
| Prepaid insurance | 7,000 |
| Total current assets | $65,000 |

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# Infographic Learning

Over half of the text is visual, providing students alternative ways of learning about accounting. In addition, a new interior design promotes accessibility.

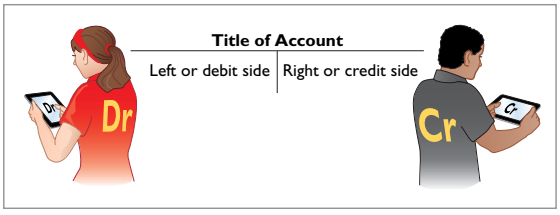


**ILLUSTRATION 2.1**
**Basic form of account**

# Real-World Decision-Making

Real-world examples that illustrate interesting situations in companies and how accounting information is used are integrated throughout the text, such as in the opening Feature Story as well as the Insight boxes.

## People, Planet, and Profit Insight

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### Regaining Goodwill

After falling to unforeseen lows amidst scandals, recalls, and economic crises, the American public's positive perception of the reputation of corporate America is on the rise. Overall corporate reputation is experiencing rehabilitation as the American public gives high marks overall to corporate America, specific industries, and the largest number of individual companies in a dozen years. This is according to the findings of a *Harris Interactive RQ Study,* which measures the reputations of the 60 most visible companies in the United States.

The survey focuses on six reputational dimensions that influence reputation and consumer behavior. Four of these dimensions, along with the five corporations that ranked highest within each, are as follows.

- **Social Responsibility**: (1) Whole Foods Market, (2) Johnson & Johnson, (3) Google, (4) The Walt Disney Company, (5) Procter & Gamble Co.
- **Emotional Appeal**: (1) Johnson & Johnson, (2) Amazon.com, (3) UPS, (4) General Mills, (5) Kraft Foods
- **Financial Performance**: (1) Google, (2) Berkshire Hathaway, (3) Apple, (4) Intel, (5) The Walt Disney Company
- **Products and Services**: (1) Intel Corporation, (2) 3M Company, (3) Johnson & Johnson, (4) Google, (5) Procter & Gamble Co.

**Source:** www.harrisinteractive.com.

**Name two industries today which are probably rated low on the reputational characteristics of "being trusted" and "having high ethical standards." (Go to WileyPLUS for this answer and additional questions.)**

# Additional Guidance

Throughout the text, marginal notes, such as **Helpful Hints**, **Alternative Terminology**, and **Ethics Notes**, are provided as additional guidance. In addition, more than 100 new solution walkthrough videos are now available in WileyPLUS.

## Correcting Entries—An Avoidable Step

Unfortunately, errors may occur in the recording process. Companies should correct errors, **as soon as they discover them**, by journalizing and posting **correcting entries**. If the accounting records are free of errors, no correcting entries are needed.

You should recognize several differences between correcting entries and adjusting entries. First, adjusting entries are an integral part of the accounting cycle. Correcting entries, on the other hand, are unnecessary if the records are error-free. Second, companies journalize and post adjustments **only at the end of an accounting period**. In contrast, companies make correcting entries **whenever they discover an error** (see **Ethics Note**). Finally, adjusting entries always affect at least one balance sheet account and one income statement account. In

**ETHICS NOTE**

**When companies find errors in previously released income statements, they restate those numbers. Perhaps because of the increased scrutiny caused by Sarbanes-Oxley, in a recent year companies filed a record 1,195 restatements**

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# Acknowledgments

*Accounting Principles* has benefited greatly from the input of focus group participants, manuscript reviewers, those who have sent comments by letter or e-mail, ancillary authors, and proofers. We greatly appreciate the constructive suggestions and innovative ideas of reviewers and the creativity and accuracy of the ancillary authors and checkers.

Karen Andrews
*Lewis-Clark State College*

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Robert Barta
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We thank Benjamin Huegel and Teresa Speck of St. Mary's University for their extensive efforts in the preparation of the homework materials related to Current Designs. We also appreciate the considerable support provided to us by the following people at Current Designs: Mike Cichanowski, Jim Brown, Diane Buswell, and Jake Greseth. We also benefited from the assistance and suggestions provided to us by Joan Van Hise in the preparation of materials related to sustainability.

We appreciate the exemplary support and commitment given to us by editor Lauren Harrell Krassow, marketing manager Carolyn Wells, lead product designer Ed Brislin, editorial supervisor Terry Ann Tatro, editorial associate Margaret Thompson, product designer Matt Origoni, assistant project manager Cyndy Taylor, designer Wendy Lai, photo editor Mary Ann Price, indexer Steve Ingle, senior production editor Elena Saccaro, and Denise Showers at Aptara. All of these professionals provided innumerable services that helped the text take shape.

We will appreciate suggestions and comments from users—instructors and students alike. You can send your thoughts and ideas about the text to us via email at: *AccountingAuthors@yahoo.com.*

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# Accounting in Action

*The **Chapter Preview** describes the purpose of the chapter and highlights major topics.*

## Chapter Preview

The following Feature Story about **Columbia Sportswear Company** highlights the importance of having good financial information and knowing how to use it to make effective business decisions. Whatever your pursuits or occupation, the need for financial information is inescapable. You cannot earn a living, spend money, buy on credit, make an investment, or pay taxes without receiving, using, or dispensing financial information. Good decision-making depends on good information.

*The **Feature Story** helps you picture how the chapter topic relates to the real world of accounting and business.*

## Feature Story

### Knowing the Numbers

Many students who take this course do not plan to be accountants. If you are in that group, you might be thinking, "If I'm not going to be an accountant, why do I need to know accounting?" Well, consider this quote from Harold Geneen, the former chairman of **IT&T**: "To be good at your business, you have to know the numbers—cold." In business, accounting and financial statements are the means for communicating the numbers. If you don't know how to read financial statements, you can't really know your business.

Knowing the numbers is sometimes even a matter of corporate survival. Consider the story of **Columbia Sportswear Company**, headquartered in Portland, Oregon. Gert Boyle's family fled Nazi Germany when she was 13 years old and then purchased a small hat company in Oregon, Columbia Hat

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Company. In 1971, Gert's husband, who was then running the company, died suddenly of a heart attack. The company was in the midst of an aggressive expansion, which had taken its sales above $1 million for the first time but which had also left the company financially stressed. Gert took over the small, struggling company with help from her son Tim, who was then a senior at the University of Oregon. Somehow, they kept the company afloat. Today, Columbia has more than 4,000 employees and annual sales in excess of $1 billion. Its brands include Columbia, Mountain Hardwear, Sorel, and Montrail. Gert still heads up the Board of Directors, and Tim is the company's President and CEO.

Columbia doesn't just focus on financial success. The company is very committed to corporate, social, and environmental responsibility. For example, several of its factories have participated in a project to increase health awareness of female factory workers in developing countries. Columbia was also a founding member of the Sustainable Apparel Coalition, which is a group that strives to reduce the environmental and social impact of the apparel industry. In addition, it monitors all of the independent factories that produce its products to ensure that they comply with the company's Standards of Manufacturing Practices. These standards address issues including forced labor, child labor, harassment, wages and benefits, health and safety, and the environment.

Employers such as Columbia Sportswear generally assume that managers in all areas of the company are "financially literate." To help prepare you for that, in this textbook you will learn how to read and prepare financial statements, and how to use basic tools to evaluate financial results.

*The **Chapter Outline** presents the chapter's topics and subtopics, as well as practice opportunities.*

# Chapter Outline

## LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Identify the activities and users associated with accounting. | • Three activities<br>• Who uses accounting data | **DO IT! 1** Basic Concepts |
| **LO 2** Explain the building blocks of accounting: ethics, principles, and assumptions. | • Ethics<br>• GAAP<br>• Measurement principles<br>• Assumptions | **DO IT! 2** Building Blocks of Accounting |
| **LO 3** State the accounting equation, and define its components. | • Assets<br>• Liabilities<br>• Owner's equity | **DO IT! 3** Owner's Equity Effects |
| **LO 4** Analyze the effects of business transactions on the accounting equation. | • Accounting transactions<br>• Transaction analysis<br>• Summary of transactions | **DO IT! 4** Tabular Analysis |
| **LO 5** Describe the four financial statements and how they are prepared. | • Income statement<br>• Owner's equity statement<br>• Balance sheet<br>• Statement of cash flows | **DO IT! 5** Financial Statement Items |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
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# Accounting Activities and Users

**LEARNING OBJECTIVE 1**

Identify the activities and users associated with accounting.

What consistently ranks as one of the top career opportunities in business? What frequently rates among the most popular majors on campus? What was the undergraduate degree chosen by **Nike** founder Phil Knight, **Home Depot** co-founder Arthur Blank, former acting director of the **Federal Bureau of Investigation (FBI)** Thomas Pickard, and numerous members of Congress? Accounting.[1] Why did these people choose accounting? They wanted to understand what was happening financially to their organizations. Accounting is the financial information system that provides these insights. In short, to understand your organization, you have to know the numbers.

**Accounting** consists of three basic activities—it **identifies**, **records**, and **communicates** the economic events of an organization to interested users. Let's take a closer look at these three activities.

***Essential terms*** *are printed in blue when they first appear, and are defined in the end-of-chapter* ***Glossary Review****.*

## Three Activities

As a starting point to the accounting process, a company **identifies** the **economic events relevant to its business**. Examples of economic events are the sale of snack chips by **PepsiCo**, the provision of cell phone services by **AT&T**, and the payment of wages by **Facebook**.

Once a company like PepsiCo identifies economic events, it **records** those events in order to provide a history of its financial activities. Recording consists of keeping a **systematic**, **chronological diary of events**, measured in dollars and cents. In recording, PepsiCo also classifies and summarizes economic events.

Finally, PepsiCo **communicates** the collected information to interested users by means of **accounting reports**. The most common of these reports are called **financial statements**. To make the reported financial information meaningful, PepsiCo reports the recorded data in a standardized way. It accumulates information resulting from similar transactions. For example, PepsiCo accumulates all sales transactions over a certain period of time and reports the data as one amount in the company's financial statements. Such data are said to be reported **in the aggregate**. By presenting the recorded data in the aggregate, the accounting process simplifies a multitude of transactions and makes a series of activities understandable and meaningful.

A vital element in communicating economic events is the accountant's ability to **analyze and interpret** the reported information. Analysis involves use of ratios, percentages, graphs, and charts to highlight significant financial trends and relationships. Interpretation involves **explaining the uses**, **meaning**, **and limitations of reported data**. Appendices A–E show the financial statements of **Apple Inc.**, **PepsiCo Inc.**, **The Coca-Cola Company**, **Amazon.com, Inc.**, and **Wal-Mart Stores, Inc.**, respectively. (In addition, in the *A Look at IFRS* section at the end of each chapter, the French company **Louis Vuitton Moët Hennessy** is analyzed.) We refer to these statements at various places throughout the textbook. At this point, these financial statements probably strike you as complex and confusing. By the end of this course, you'll be surprised at your ability to understand, analyze, and interpret them.

[1] The appendix to this chapter describes job opportunities for accounting majors and explains why accounting is such a popular major.

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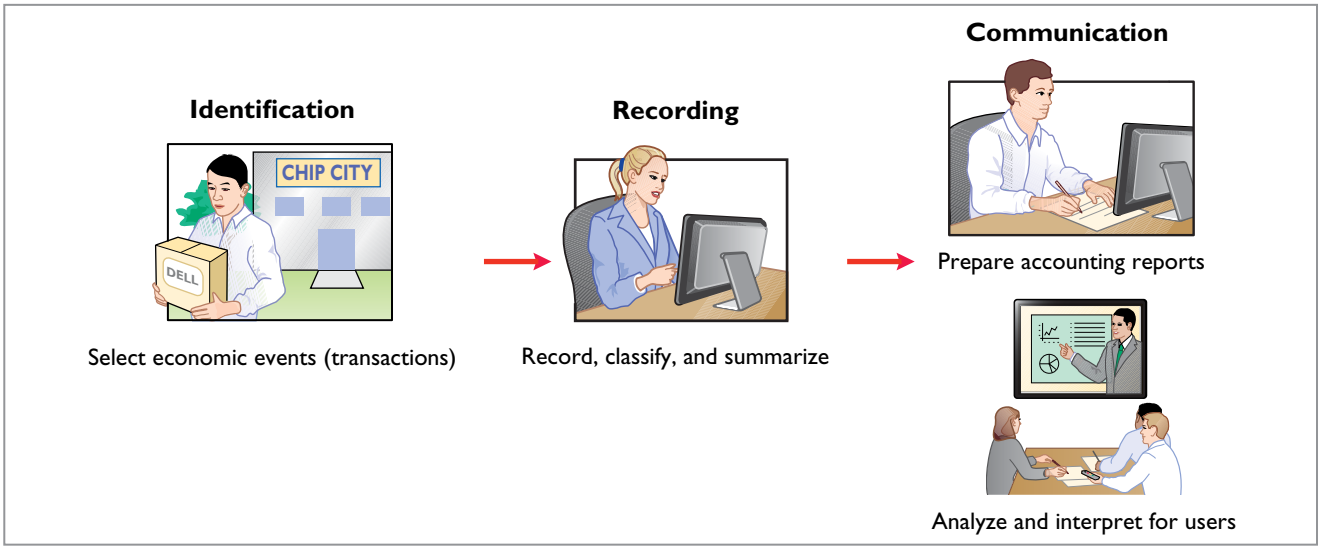
Illustration 1.1 summarizes the activities of the accounting process.

**ILLUSTRATION 1.1** The activities of the accounting process




You should understand that the accounting process **includes** the bookkeeping function. Bookkeeping usually involves **only** the recording of economic events. It is therefore just one part of the accounting process. In total, accounting involves **the entire process of identifying, recording, and communicating economic events**.[2]

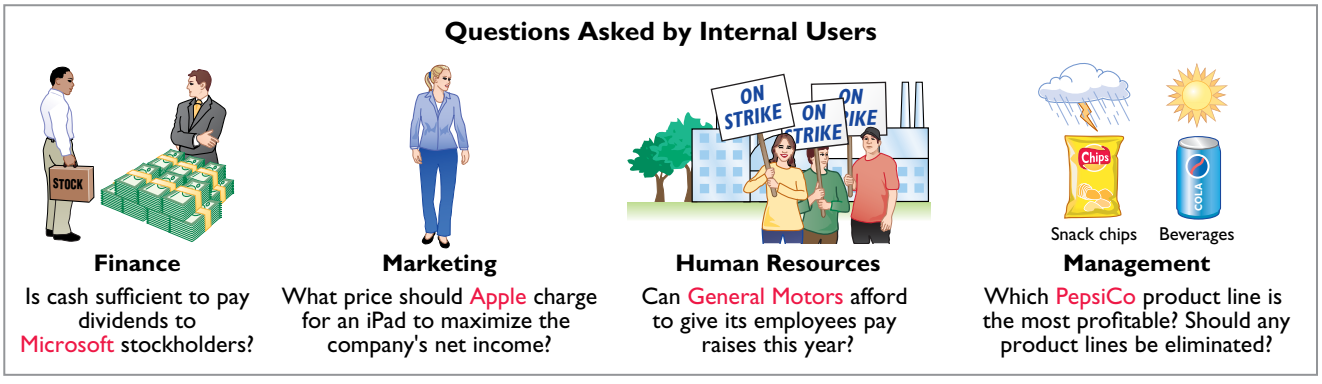
## Who Uses Accounting Data

The financial information that users need depends upon the kinds of decisions they make. There are two broad groups of users of financial information: internal users and external users.

### Internal Users

**Internal users** of accounting information are the managers who plan, organize, and run a business. These include marketing managers, production supervisors, finance directors, and company officers. In running a business, internal users must answer many important questions, as shown in Illustration 1.2.

**ILLUSTRATION 1.2** Questions that internal users ask


Questions Asked by Internal Users
STOCK
ON STRIKE
Chips
COLA
Finance
Is cash sufficient to pay dividends to Microsoft stockholders?
Marketing
What price should Apple charge for an iPad to maximize the company's net income?
Human Resources
Can General Motors afford to give its employees pay raises this year?
Snack chips
Beverages
Management
Which PepsiCo product line is the most profitable? Should any product lines be eliminated?

[2]The origins of accounting are generally attributed to the work of Luca Pacioli, an Italian Renaissance mathematician. Pacioli was a close friend and tutor to Leonardo da Vinci and a contemporary of Christopher Columbus. In his 1494 text *Summa de Arithmetica*, *Geometria*, *Proportione et Proportionalite*, Pacioli described a system to ensure that financial information was recorded efficiently and accurately.

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To answer these and other questions, internal users need detailed information on a timely basis. **Managerial accounting** provides internal reports to help users make decisions about their companies. Examples are financial comparisons of operating alternatives, projections of income from new sales campaigns, and forecasts of cash needs for the next year.

## Accounting Across the Organization — Clif Bar & Company

© Dan Moore/iStockphoto

### Owning a Piece of the Bar

The original Clif Bar® energy bar was created in 1990 after six months of experimentation by Gary Erickson and his mother in her kitchen. Today, the company has almost 300 employees and is considered one of the leading Landor's Breakaway Brands®. One of **Clif Bar & Company**'s proudest moments was the creation of an employee stock ownership plan (ESOP) in 2010. This plan gives its employees 20% ownership of the company. The ESOP also resulted in Clif Bar enacting an open-book management program, including the commitment to educate all employee-owners about its finances. Armed with basic accounting knowledge, employees are more aware of the financial impact of their actions, which leads to better decisions.

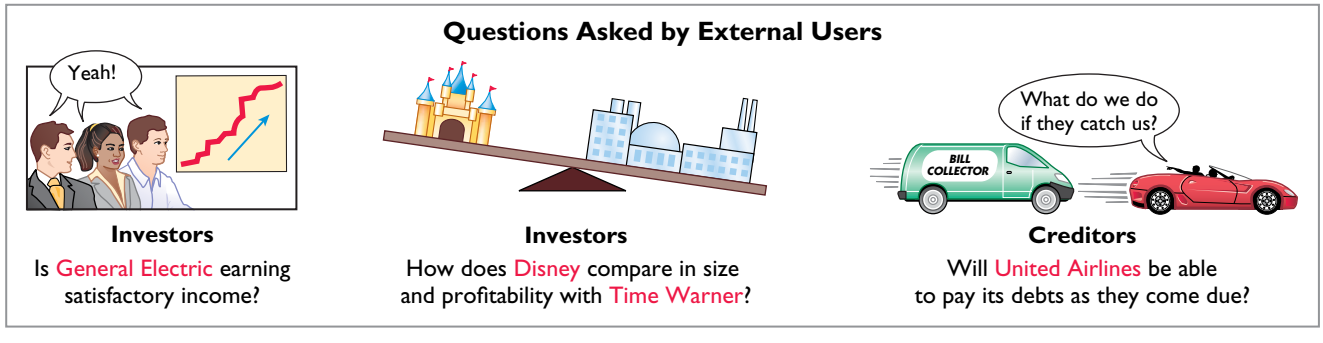
**What are the benefits to the company and to the employees of making the financial statements available to all employees? (Go to WileyPLUS for this answer and additional questions.)**

***Accounting Across the Organization*** *boxes demonstrate applications of accounting information in various business functions.*

## External Users

**External users** are individuals and organizations outside a company who want financial information about the company. The two most common types of external users are investors and creditors. **Investors** (owners) use accounting information to decide whether to buy, hold, or sell ownership shares of a company. **Creditors** (such as suppliers and bankers) use accounting information to evaluate the risks of granting credit or lending money. **Illustration 1.3** shows some questions that investors and creditors may ask.

**ILLUSTRATION 1.3** **Questions that external users ask**


Questions Asked by External Users
Yeah!
Investors
Is General Electric earning satisfactory income?
Investors
How does Disney compare in size and profitability with Time Warner?
What do we do if they catch us?
BILL COLLECTOR
Creditors
Will United Airlines be able to pay its debts as they come due?

**Financial accounting** answers these questions. It provides economic and financial information for investors, creditors, and other external users. The information needs of external users vary considerably. **Taxing authorities**, such as the Internal Revenue Service, want to know whether the company complies with tax laws. **Regulatory agencies**, such as the Securities and Exchange Commission or the Federal Trade Commission, want to know whether the company is operating within prescribed rules. **Customers** are interested in whether a company like **Tesla Motors** will continue to honor product warranties and support its product lines. **Labor unions**, such as the **Major League Baseball Players Association**, want to know whether the owners have the ability to pay increased wages and benefits.

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*The **DO IT!** exercises ask you to put newly acquired knowledge to work. They outline the **Action Plan** necessary to complete the exercise, and they show a **Solution**.*

### DO IT! 1 | Basic Concepts

Indicate whether each of the five statements presented below is true or false. If false, indicate how to correct the statement.

1. The three steps in the accounting process are identification, recording, and communication.
2. Bookkeeping encompasses all steps in the accounting process.
3. Accountants prepare, but do not interpret, financial reports.
4. The two most common types of external users are investors and company officers.
5. Managerial accounting activities focus on reports for internal users.

**ACTION PLAN**

- Review the basic concepts discussed.
- Develop an understanding of the key terms used.

**Solution**

**1.** True **2.** False. Bookkeeping involves only the recording step. **3.** False. Accountants analyze and interpret information in reports as part of the communication step. **4.** False. The two most common types of external users are investors and creditors. **5.** True.

Related exercise material: **DO IT! 1.1, E1.1, and E1.2.**

# The Building Blocks of Accounting

**LEARNING OBJECTIVE 2**

Explain the building blocks of accounting: ethics, principles, and assumptions.

A doctor follows certain protocols in treating a patient's illness. An architect follows certain structural guidelines in designing a building. Similarly, an accountant follows certain standards in reporting financial information. These standards are based on specific principles and assumptions. For these standards to work, however, a fundamental business concept must be present—ethical behavior.

## Ethics in Financial Reporting

People won't gamble in a casino if they think it is "rigged." Similarly, people won't play the stock market if they think prices are rigged. At one time, the financial press was full of articles about financial scandals at **Enron**, **WorldCom**, **HealthSouth**, and **AIG**. As more scandals came to light, a mistrust of financial reporting in general seemed to be developing. One article in the *Wall Street Journal* noted that "repeated disclosures about questionable accounting practices have bruised investors' faith in the reliability of earnings reports, which in turn has sent stock prices tumbling." Imagine trying to carry on a business or invest money if you could not depend on the financial statements to be honestly prepared. Information would have no credibility. There is no doubt that a sound, well-functioning economy depends on accurate and dependable financial reporting.

United States regulators and lawmakers were very concerned that the economy would suffer if investors lost confidence in corporate accounting because of unethical financial reporting. In response, Congress passed the **Sarbanes-Oxley Act (SOX)** to reduce unethical corporate behavior and decrease the likelihood of future corporate scandals (see **Ethics Note**). As a result of SOX, top management must now certify the accuracy of financial information. In addition, penalties for fraudulent financial activity are much more severe. Also, SOX increased the independence requirements of the outside auditors who review the accuracy of corporate financial statements and increased the oversight role of boards of directors.

**ETHICS NOTE**

**Circus-founder P.T. Barnum is alleged to have said, "Trust everyone, but cut the deck." What Sarbanes-Oxley does is to provide measures that (like cutting the deck of playing cards) help ensure that fraud will not occur.**

***Ethics Notes** help sensitize you to some of the ethical issues in accounting.*

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The standards of conduct by which actions are judged as right or wrong, honest or dishonest, fair or not fair, are **ethics**. Effective financial reporting depends on sound ethical behavior. To sensitize you to ethical situations in business and to give you practice at solving ethical dilemmas, we address ethics in a number of ways in this textbook:

1. A number of the *Feature Stories* and other parts of the textbook discuss the central importance of ethical behavior to financial reporting.
2. *Ethics Insight* boxes and marginal *Ethics Notes* highlight ethics situations and issues in actual business settings.
3. Many of the *People, Planet, and Profit Insight* boxes focus on ethical issues that companies face in measuring and reporting social and environmental issues.
4. At the end of the chapter, an *Ethics Case* simulates a business situation and asks you to put yourself in the position of a decision-maker in that case.

When analyzing these various ethics cases and your own ethical experiences, you should apply the three steps outlined in **Illustration 1.4**.

**ILLUSTRATION 1.4** **Steps in analyzing ethics cases and situations**

**1. Recognize an ethical situation and the ethical issues involved.**
Use your personal ethics to identify ethical situations and issues. Some businesses and professional organizations provide written codes of ethics for guidance in some business situations.

**2. Identify and analyze the principal elements in the situation.**
Identify the **stakeholders**—persons or groups who may be harmed or benefited. Ask the question: What are the responsibilities and obligations of the parties involved?

**3. Identify the alternatives, and weigh the impact of each alternative on various stakeholders.**
Select the most ethical alternative, considering all the consequences. Sometimes there will be one right answer. Other situations involve more than one right solution; these situations require an evaluation of each and a selection of the best alternative.

***Insight*** *boxes provide examples of business situations from various perspectives—ethics, investor, international, and corporate social responsibility. Guideline answers to the critical thinking questions as well as additional questions are available in* ***WileyPLUS****.*

## Ethics Insight — Dewey & LeBoeuf LLP

© Alliance/Shutterstock

### I Felt the Pressure—Would You?

"I felt the pressure." That's what some of the employees of the now-defunct law firm of **Dewey & LeBoeuf LLP** indicated when they helped to overstate revenue and use accounting tricks to hide losses and cover up cash shortages. These employees worked for the former finance director and former chief financial officer (CFO) of the firm. Here are some of their comments:

- "I was instructed by the CFO to create invoices, knowing they would not be sent to clients. When I created these invoices, I knew that it was inappropriate."
- "I intentionally gave the auditors incorrect information in the course of the audit."

What happened here is that a small group of lower-level employees over a period of years carried out the instructions of their bosses. Their bosses, however, seemed to have no concern as evidenced by various e-mails with one another in which they referred to their financial manipulations as accounting tricks, cooking the books, and fake income.

**Source:** Ashby Jones, "Guilty Pleas of Dewey Staff Detail the Alleged Fraud," *Wall Street Journal* (March 28, 2014).

**Why did these employees lie, and what do you believe should be their penalty for these lies? (Go to WileyPLUS for this answer and additional questions.)**

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INTERNATIONAL NOTE

**Over 115 countries use international standards (called IFRS). For example, all companies in the European Union follow IFRS. The differences between U.S. and international standards are not generally significant.**

***International Notes*** *highlight differences between U.S. and international accounting standards.*

## Generally Accepted Accounting Principles

The accounting profession has developed standards that are generally accepted and universally practiced. This common set of standards is called **generally accepted accounting principles (GAAP)**. These standards indicate how to report economic events.

The primary accounting standard-setting body in the United States is the **Financial Accounting Standards Board (FASB)**. The **Securities and Exchange Commission (SEC)** is the agency of the U.S. government that oversees U.S. financial markets and accounting standard-setting bodies. The SEC relies on the FASB to develop accounting standards, which public companies must follow. Many countries outside of the United States have adopted the accounting standards issued by the **International Accounting Standards Board (IASB)**. These standards are called **International Financial Reporting Standards (IFRS)** (see **International Note**).

As markets become more global, it is often desirable to compare the results of companies from different countries that report using different accounting standards. In order to increase comparability, in recent years the two standard-setting bodies have made efforts to reduce the differences between U.S. GAAP and IFRS. This process is referred to as **convergence**. As a result of these convergence efforts, someday there may be a single set of high-quality accounting standards that are used by companies around the world. Because convergence is such an important issue, we highlight any major differences between GAAP and IFRS in *International Notes* (as shown in the margin here) and provide a more in-depth discussion in the *A Look at* IFRS section at the end of each chapter.

### International Insight

Toru-Hanai-Pool/Getty Images, Inc.

#### The Korean Discount

If you think that accounting standards don't matter, consider these events in South Korea. For many years, international investors complained that the financial reports of South Korean companies were inadequate and inaccurate. Accounting practices there often resulted in huge differences between stated revenues and actual revenues. Because investors did not have faith in the accuracy of the numbers, they were unwilling to pay as much for the shares of these companies relative to shares of comparable companies in different countries. This difference in share price was often referred to as the "Korean discount."

In response, Korean regulators decided that companies would have to comply with international accounting standards. This change was motivated by a desire to "make the country's businesses more transparent" in order to build investor confidence and spur economic growth. Many other Asian countries, including China, India, Japan, and Hong Kong, have also decided either to adopt international standards or to create standards that are based on the international standards.

**Source:** Evan Ramstad, "End to 'Korea Discount'?" *Wall Street Journal* (March 16, 2007).

**What is meant by the phrase "make the country's businesses more transparent"? Why would increasing transparency spur economic growth? (Go to WileyPLUS for this answer and additional questions.)**

## Measurement Principles

HELPFUL HINT

***Relevance* and *faithful representation* are two primary qualities that make accounting information useful for decision-making.**

***Helpful Hints*** *further clarify concepts being discussed.*

GAAP generally uses one of two measurement principles, the historical cost principle or the fair value principle. Selection of which principle to follow generally relates to trade-offs between relevance and faithful representation (see **Helpful Hint**). **Relevance** means that financial information is capable of making a difference in a decision. **Faithful representation** means that the numbers and descriptions match what really existed or happened—they are factual.

### Historical Cost Principle

The **historical cost principle** (or cost principle) dictates that companies record assets at their cost. This is true not only at the time the asset is purchased, but also over the time the asset is held. For example, if **Best Buy** purchases land for $300,000, the company initially reports

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it in its accounting records at $300,000. But what does Best Buy do if, by the end of the next year, the fair value of the land has increased to $400,000? Under the historical cost principle, it continues to report the land at $300,000.

### Fair Value Principle

The **fair value principle** states that assets and liabilities should be reported at fair value (the price received to sell an asset or settle a liability). Fair value information may be more useful than historical cost for certain types of assets and liabilities. For example, certain investment securities are reported at fair value because market price information is usually readily available for these types of assets. In determining which measurement principle to use, companies weigh the factual nature of cost figures versus the relevance of fair value. In general, most companies choose to use cost. Only in situations where assets are actively traded, such as investment securities, do companies apply the fair value principle extensively.

## Assumptions

Assumptions provide a foundation for the accounting process. Two main assumptions are the **monetary unit assumption** and the **economic entity assumption**.

### Monetary Unit Assumption

The **monetary unit assumption** requires that companies include in the accounting records only transaction data that can be expressed in money terms. This assumption enables accounting to quantify (measure) economic events. The monetary unit assumption is vital to applying the historical cost principle.

This assumption prevents the inclusion of some relevant information in the accounting records. For example, the health of a company's owner, the quality of service, and the morale of employees are not included. The reason: Companies cannot quantify this information in money terms. Though this information is important, companies record only events that can be measured in money.

### Economic Entity Assumption

**An economic entity can be any organization or unit in society.** It may be a company (such as **Crocs, Inc.**), a governmental unit (the state of Ohio), a municipality (Seattle), a school district (St. Louis District 48), or a church (Southern Baptist). The **economic entity assumption** requires that the activities of the entity be kept separate and distinct from the activities of its owner and all other economic entities (see **Ethics Note**). To illustrate, Sally Rider, owner of Sally's Boutique, must keep her personal living costs separate from the expenses of the business. Similarly, **J. Crew** and **Gap Inc.** are segregated into separate economic entities for accounting purposes.

**ETHICS NOTE**

**The importance of the economic entity assumption is illustrated by scandals involving Adelphia. In this case, senior company employees entered into transactions that blurred the line between the employees' financial interests and those of the company. For example, Adelphia guaranteed over $2 billion of loans to the founding family.**

**Proprietorship.** A business owned by one person is generally a **proprietorship**. The owner is often the manager/operator of the business. Small service-type businesses (plumbing companies, beauty salons, and auto repair shops), farms, and small retail stores (antique shops, clothing stores, and used-book stores) are often proprietorships. **Usually, only a relatively small amount of money (capital) is necessary to start in business as a proprietorship. The owner (proprietor) receives any profits, suffers any losses, and is personally liable for all debts of the business.** There is no legal distinction between the business as an economic unit and the owner, but the accounting records of the business activities are kept separate from the personal records and activities of the owner.

**Partnership.** A business owned by two or more persons associated as partners is a **partnership**. In most respects a partnership is like a proprietorship except that more than one owner is involved. Typically, a partnership agreement (written or oral) sets forth such terms as initial investment, duties of each partner, division of net income (or net loss), and settlement to

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be made upon death or withdrawal of a partner. Each partner generally has unlimited personal liability for the debts of the partnership. **Like a proprietorship, for accounting purposes the partnership transactions must be kept separate from the personal activities of the partners.** Partnerships are often used to organize retail and service-type businesses, including professional practices (lawyers, doctors, architects, and certified public accountants).

**Corporation.** A business organized as a separate legal entity under state corporation law and having ownership divided into transferable shares of stock is a **corporation**. The holders of the shares (stockholders) **enjoy limited liability**; that is, they are not personally liable for the debts of the corporate entity. Stockholders **may transfer all or part of their ownership shares to other investors at any time** (i.e., sell their shares). The ease with which ownership can change adds to the attractiveness of investing in a corporation. Because ownership can be transferred without dissolving the corporation, the corporation **enjoys an unlimited life**.

Although the combined number of proprietorships and partnerships in the United States is more than five times the number of corporations, the revenue produced by corporations is eight times greater. Most of the largest companies in the United States—for example, **ExxonMobil**, **Ford**, **Wal-Mart Stores, Inc.**, **Citigroup**, and **Apple**—are corporations.

## Accounting Across the Organization

Josef Volavka/iStockphoto

### Spinning the Career Wheel

How will the study of accounting help you? A working knowledge of accounting is desirable for virtually every field of business. Some examples of how accounting is used in business careers include:

**General management:** Managers at **Ford Motors**, Massachusetts General Hospital, California State University—Fullerton, a **McDonald's** franchise, and a **Trek** bike shop all need to understand accounting data in order to make wise business decisions.

**Marketing:** Marketing specialists at **Procter & Gamble** must be sensitive to costs and benefits, which accounting helps them quantify and understand. Making a sale is meaningless unless it is a profitable sale.

**Finance:** Do you want to be a banker for **Citicorp**, an investment analyst for **Goldman Sachs**, or a stock broker for **Merrill Lynch**? These fields rely heavily on accounting knowledge to analyze financial statements. In fact, it is difficult to get a good job in a finance function without two or three courses in accounting.

**Real estate:** Are you interested in being a real estate broker for **Prudential Real Estate**? Because a third party—the bank—is almost always involved in financing a real estate transaction, brokers must understand the numbers involved: Can the buyer afford to make the payments to the bank? Does the cash flow from an industrial property justify the purchase price? What are the tax benefits of the purchase?

**How might accounting help you? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 2 | Building Blocks of Accounting

Indicate whether each of the five statements presented below is true or false. If false, indicate how to correct the statement.

1. Congress passed the Sarbanes-Oxley Act to reduce unethical behavior and decrease the likelihood of future corporate scandals.
2. The primary accounting standard-setting body in the United States is the Financial Accounting Standards Board (FASB).
3. The historical cost principle dictates that companies record assets at their cost. In later periods, however, the fair value of the asset must be used if fair value is higher than its cost.
4. Relevance means that financial information matches what really happened; the information is factual.
5. A business owner's personal expenses must be separated from expenses of the business to comply with accounting's economic entity assumption.

**ACTION PLAN**

- Review the discussion of ethics and financial reporting standards.
- Develop an understanding of the key terms used.

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**Solution**

**1.** True. **2.** True. **3.** False. The historical cost principle dictates that companies record assets at their cost. Under the historical cost principle, the company must also use cost in later periods. **4.** False. Faithful representation, not relevance, means that financial information matches what really happened; the information is factual. **5.** True.

Related exercise material: **DO IT! 1.2, E1.3, and E1.4.**

# The Accounting Equation

**LEARNING OBJECTIVE 3**

State the accounting equation, and define its components.

The two basic elements of a business are what it owns and what it owes. **Assets** are the resources a business owns. For example, **Alphabet Inc.** has total assets of approximately $167.5 billion. Liabilities and owner's equity are the rights or claims against these resources. Thus, Alphabet has $167.5 billion of claims against its $167.5 billion of assets. Claims of those to whom the company owes money (creditors) are called **liabilities**. Claims of owners are called **owner's equity**. Alphabet has liabilities of $28.5 billion and owners' equity of $139.0 billion.

We can express the relationship of assets, liabilities, and owner's equity as an equation, as shown in **Illustration 1.5**.

| Assets | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|

**ILLUSTRATION 1.5**
**The basic accounting equation**

This relationship is the **basic accounting equation**. Assets must equal the sum of liabilities and owner's equity. Liabilities appear before owner's equity in the basic accounting equation because they are paid first if a business is liquidated.

The accounting equation applies to all **economic entities** regardless of size, nature of business, or form of business organization. It applies to a small proprietorship such as a corner grocery store as well as to a giant corporation such as **PepsiCo**. The equation provides the **underlying framework** for recording and summarizing economic events.

Let's look in more detail at the categories in the basic accounting equation.

## Assets

As noted above, **assets** are resources a business owns. The business uses its assets in carrying out such activities as production and sales. The common characteristic possessed by all assets is **the capacity to provide future services or benefits**. In a business, that service potential or future economic benefit eventually results in cash inflows (receipts). For example, consider Campus Pizza, a local restaurant. It owns a delivery truck that provides economic benefits from delivering pizzas. Other assets of Campus Pizza are tables, chairs, jukebox, cash register, oven, tableware, and, of course, cash.

## Liabilities

**Liabilities** are claims against assets—that is, existing debts and obligations. Businesses of all sizes usually borrow money and purchase merchandise on credit. These economic activities result in payables of various sorts:

- Campus Pizza, for instance, purchases cheese, sausage, flour, and beverages on credit from suppliers. These obligations are called **accounts payable**.

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- Campus Pizza also has a **note payable** to First National Bank for the money borrowed to purchase the delivery truck.
- Campus Pizza may also have **salaries and wages payable** to employees and **sales and real estate taxes payable** to the local government.

All of these persons or entities to whom Campus Pizza owes money are its **creditors**.

Creditors may legally force the liquidation of a business that does not pay its debts. In that case, the law requires that creditor claims be paid **before** ownership claims.

## Owner's Equity

**HELPFUL HINT**

**In some places, we use the term "owner's equity" and in others we use "owners' equity." *Owner's* (singular, possessive) refers to one owner (the case with a sole proprietorship). *Owners'* (plural, possessive) refers to multiple owners (the case with partnerships or corporations).**

The ownership claim on total assets is **owner's equity** (see **Helpful Hint**). It is equal to total assets minus total liabilities. Here is why: The assets of a business are claimed by either creditors or owners. To find out what belongs to owners, we subtract the creditors' claims (the liabilities) from assets. The remainder is the owner's claim on the assets—the owner's equity. Since the claims of creditors must be paid **before** ownership claims, owner's equity is often referred to as **residual equity**.

### Increases in Owner's Equity

In a proprietorship, owner's investments and revenues increase owner's equity.

**Investments by Owner.** **Investments by owner** are the assets the owner puts into the business. These investments increase owner's equity. They are recorded in a category called **owner's capital**.

**Revenues.** **Revenues** are the **increases in assets or decreases in liabilities resulting from the sale of goods or the performance of services in the normal course of business**. Revenues usually result in an increase in an asset. They may arise from different sources and are called different names depending on the nature of the business. Campus Pizza, for instance, has two categories of sales revenues—pizza sales and beverage sales.

### Decreases in Owner's Equity

In a proprietorship, owner's drawings and expenses decrease owner's equity.

**Drawings.** An owner may withdraw cash or other assets for personal use. We use a separate classification called **drawings** to determine the total withdrawals for each accounting period. **Drawings decrease owner's equity.** They are recorded in a category called owner's drawings.

**Expenses.** **Expenses** are the cost of assets consumed or services used in the process of generating revenue. They are **decreases in owner's equity that result from operating the business**. For example, Campus Pizza recognizes the following expenses: cost of ingredients (meat, flour, cheese, tomato paste, mushrooms, etc.); cost of beverages; salaries and wages expense; utilities expense (electric, gas, and water expense); delivery expense (gasoline, repairs, licenses, etc.); supplies expense (napkins, detergents, aprons, etc.); rent expense; interest expense; and property tax expense.

In summary, owner's equity is increased by an owner's investments and by revenues from business operations. Owner's equity is decreased by an owner's withdrawals of assets and by expenses. **Illustration 1.6** expands the basic accounting equation by showing the items that comprise owner's equity. This format is referred to as the **expanded accounting equation**.

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**ILLUSTRATION 1.6** Expanded accounting equation

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Basic Equation** | **Assets** | = | **Liabilities** | + | **Owner's Equity** | | | | | |
| **Expanded Equation** | **Assets** | = | **Liabilities** | + | **Owner's Capital** | − | **Owner's Drawings** | + **Revenues** | − | **Expenses** |

### DO IT! 3 | Owner's Equity Effects

Classify the following items as investment by owner (I), owner's drawings (D), revenues (R), or expenses (E). Then indicate whether each item increases or decreases owner's equity.

**1.** Rent Expense.
**2.** Service Revenue.
**3.** Drawings.
**4.** Salaries and Wages Expense.

**Solution**

**1.** Rent Expense is an expense (E); it decreases owner's equity. **2.** Service Revenue is revenue (R); it increases owner's equity. **3.** Drawings is owner's drawings (D); it decreases owner's equity. **4.** Salaries and Wages Expense is an expense (E); it decreases owner's equity.

Related exercise material: **BE1.1, BE1.2, BE1.3, BE1.4, BE1.5, BE1.6, DO IT! 1.3, and E1.5.**

**ACTION PLAN**

- Understand the sources of revenue.
- Understand what causes expenses.
- Review the rules for changes in owner's equity.
- Recognize that drawings are withdrawals of cash or other assets from the business for personal use.

# Analyzing Business Transactions

**LEARNING OBJECTIVE 4**

Analyze the effects of business transactions on the accounting equation.

*This **accounting cycle graphic** illustrates the steps companies follow each period to record transactions and eventually prepare financial statements.*

The system of collecting and processing transaction data and communicating financial information to decision-makers is known as the **accounting information system**. Factors that shape an accounting information system include the nature of the company's business, the types of transactions, the size of the company, the volume of data, and the information demands of management and others.

Most businesses use computerized accounting systems—sometimes referred to as electronic data processing (EDP) systems. These systems handle all the steps involved in the recording process, from initial data entry to preparation of the financial statements. In order to remain competitive, companies continually improve their accounting systems to provide accurate and timely data for decision-making. For example, in a recent annual report, **Tootsie Roll** stated, "We also invested in additional processing and data storage hardware during the year. We view information technology as a key strategic tool, and are committed to deploying leading edge technology in this area." In addition, many companies have upgraded their accounting information systems in response to the requirements of Sarbanes-Oxley.

Accounting information systems rely on a process referred to as **the accounting cycle**. As you can see from the graphic above, the accounting cycle begins with the analysis of business transactions and ends with the preparation of a post-closing trial balance. We explain each of the steps, starting in this chapter and continuing in Chapters 2–4.

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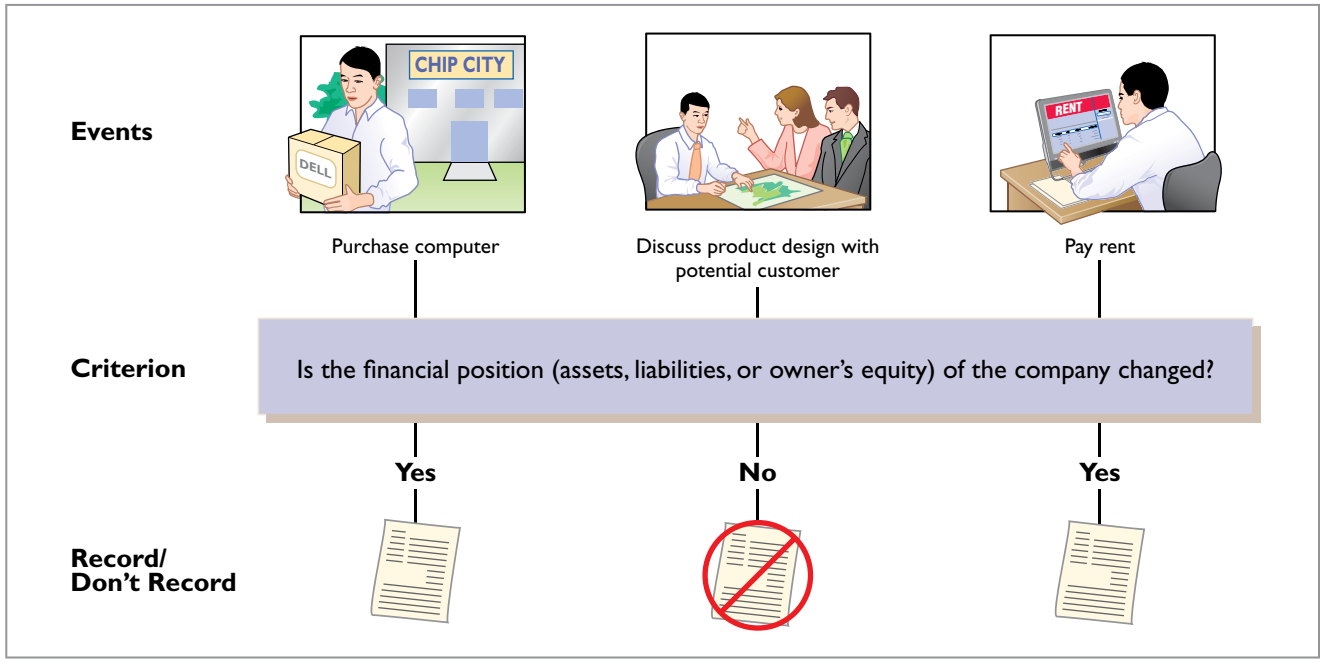
In this textbook, in order to emphasize the underlying concepts and principles, we focus on a manual accounting system. The accounting concepts and principles do not change whether a system is computerized or manual.

## Accounting Transactions

Transactions (**business transactions**) are a business's economic events recorded by accountants. Transactions may be external or internal. **External transactions** involve economic events between the company and some outside enterprise. For example, Campus Pizza's purchase of cooking equipment from a supplier, payment of monthly rent to the landlord, and sale of pizzas to customers are external transactions. **Internal transactions** are economic events that occur entirely within one company. The use of cooking and cleaning supplies are internal transactions for Campus Pizza.

Companies carry on many activities that do not represent business transactions. Examples are hiring employees, responding to e-mails, talking with customers, and placing merchandise orders. Some of these activities may lead to business transactions. Employees will earn wages, and suppliers will deliver ordered merchandise. The company must analyze each event to find out if it affects the components of the accounting equation. If it does, the company will record the transaction. Illustration 1.7 demonstrates the transaction identification process.

**ILLUSTRATION 1.7** **Transaction identification process**




Each transaction must have a dual effect on the accounting equation. For example, if an asset is increased, there must be a corresponding:

- Decrease in another asset, *or*
- Increase in a specific liability, *or*
- Increase in owner's equity.

Two or more items could be affected. For example, as one asset is increased $10,000, another asset could decrease $6,000 and a liability could increase $4,000. Any change in a liability or ownership claim is subject to similar analysis.

**HELPFUL HINT**

**Study these transactions until you are sure you understand them. They are not difficult, but understanding them is important to your success in this course. The ability to analyze transactions in terms of the basic accounting equation is essential in accounting.**

## Transaction Analysis

To demonstrate how to analyze transactions in terms of the accounting equation, we will review the business activities of Softbyte, a smartphone app development company (see Helpful Hint). Softbyte is the creation of Ray Neal, an entrepreneur who wants to create focused apps

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that inspire and engage users of all ages. Ray was encouraged to start his own business after the success of "FoodAlert," a customizable app he developed that tracks the daily location of local food trucks. The following business transactions occur during Softbyte's first month of operations.

**Transaction (1). Investment of Cash by Owner.** Ray Neal starts a smartphone app development company which he names Softbyte. On September 1, 2020, he invests $15,000 cash in the business. This transaction results in an equal increase in assets and owner's equity.

| | |
|---|---|
| Basic Analysis | The asset Cash increases $15,000, and owner's equity (specifically Owner's Capital) increases $15,000. |

Equation Analysis

| | Assets | = | Liabilities | + | Owner's Equity | |
|---|---|---|---|---|---|---|
| | | | | | Owner's | |
| | Cash | = | | | Capital | |
| (1) | +$15,000 | = | | | +$15,000 | Initial investment |

Observe that the equality of the accounting equation has been maintained. Note that the investments by the owner do not represent revenues, and they are excluded in determining net income. Therefore, it is necessary to make clear that the increase is an investment (increasing Owner's Capital) rather than revenue.

**Transaction (2). Purchase of Equipment for Cash.** Softbyte purchases computer equipment for $7,000 cash. This transaction results in an equal increase and decrease in total assets, though the composition of assets changes.

| | |
|---|---|
| Basic Analysis | The asset Cash decreases $7,000, and the asset Equipment increases $7,000. |

Equation Analysis

| | Assets | | | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|---|---|---|
| | Cash | + | Equipment | = | | | Owner's Capital |
| | $15,000 | | | | | | $15,000 |
| (2) | −7,000 | | +$7,000 | | | | |
| | $ 8,000 | + | $7,000 | = | | | $15,000 |
| | $15,000 | | | | | | |

Observe that total assets are still $15,000. Owner's equity also remains at $15,000, the amount of Ray Neal's original investment.

**Transaction (3). Purchase of Supplies on Credit.** Softbyte purchases headsets (and other computer accessories expected to last several months) for $1,600 from Mobile Solutions. Mobile Solutions agrees to allow Softbyte to pay this bill in October. This transaction is a purchase on account (a credit purchase). Assets increase because of the expected future benefits of using the headsets and computer accessories, and liabilities increase by the amount due to Mobile Solutions.

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**Basic Analysis**

The asset Supplies increases $1,600, and the liability Accounts Payable increases $1,600.

**Equation Analysis**

| | Assets | | | | | | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|---|---|---|---|---|---|
| | Cash | + | Supplies | + | Equipment | | = | Accounts Payable | + | Owner's Capital |
| | $8,000 | | | | $7,000 | | | | | $15,000 |
| (3) | | | +$1,600 | | | | | +$1,600 | | |
| | $8,000 | + | $1,600 | + | $7,000 | | = | $1,600 | + | $15,000 |
| | | | $16,600 | | | | | $16,600 | | |

Total assets are now $16,600. This total is matched by a $1,600 creditor's claim and a $15,000 ownership claim.

**Transaction (4). Services Performed for Cash.** Softbyte receives $1,200 cash from customers for app development services it has performed. This transaction represents Softbyte's principal revenue-producing activity. Recall that **revenue increases owner's equity**.

**Basic Analysis**

The asset Cash increases $1,200, and owner's equity increases $1,200 due to Service Revenue.

**Equation Analysis**

| | Assets | | | | | = | Liabilities | + | Owner's Equity | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cash | + | Supplies | + | Equipment | = | Accounts Payable | + | Owner's Capital | + | Revenues | |
| | $8,000 | | $1,600 | | $7,000 | | $1,600 | | $15,000 | | | |
| (4) | +1,200 | | | | | | | | | | +$1,200 | Service Revenue |
| | $9,200 | + | $1,600 | + | $7,000 | = | $1,600 | + | $15,000 | + | $1,200 | |
| | | | $17,800 | | | | $17,800 | | | | | |

The two sides of the equation balance at $17,800. Service Revenue is included in determining Softbyte's net income.

Note that we do not have room to give details for each individual revenue and expense account in this illustration. Thus, revenues (and expenses when we get to them) are summarized under one column heading for Revenues and one for Expenses. However, it is important to keep track of the category (account) titles affected (e.g., Service Revenue) as they will be needed when we prepare financial statements later in the chapter.

**Transaction (5). Purchase of Advertising on Credit.** Softbyte receives a bill for $250 from the *Daily News* for advertising on its online website but postpones payment until a later date. This transaction results in an increase in liabilities and a decrease in owner's equity.

**Basic Analysis**

The liability Accounts Payable increases $250, and owner's equity decreases $250 due to Advertising Expense.

**Equation Analysis**

| | Assets | | | | | = | Liabilities | + | Owner's Equity | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cash | + | Supplies | + | Equipment | = | Accounts Payable | + | Owner's Capital | + | Revenues | – | Expenses | |
| | $9,200 | | $1,600 | | $7,000 | | $1,600 | | $15,000 | | $1,200 | | | |
| (5) | | | | | | | +250 | | | | | | –$250 | Advertising Expense |
| | $9,200 | + | $1,600 | + | $7,000 | = | $1,850 | + | $15,000 | + | $1,200 | – | $ 250 | |
| | | | $17,800 | | | | | | $17,800 | | | | | |

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The two sides of the equation still balance at $17,800. Owner's equity decreases when Softbyte incurs the expense. Expenses are not always paid in cash at the time they are incurred. When Softbyte pays at a later date, the liability Accounts Payable will decrease, and the asset Cash will decrease [see Transaction (8)]. The cost of advertising is an expense (rather than an asset) because the company has **used** the benefits. Advertising Expense is included in determining net income.

**Transaction (6). Services Performed for Cash and Credit.** Softbyte performs $3,500 of app development services for customers. The company receives cash of $1,500 from customers, and it bills the balance of $2,000 on account. This transaction results in an equal increase in assets and owner's equity.

**Basic Analysis**

Three specific items are affected: The asset Cash increases $1,500, the asset Accounts Receivable increases $2,000, and owner's equity increases $3,500 due to Service Revenue.

**Equation Analysis**

| | Assets | | | | = Liabilities | + Owner's Equity | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Cash | + Accounts Receivable | + Supplies | + Equipment | = Accounts Payable | + Owner's Capital | + Revenues | − Expenses | |
| | $9,200 | | $1,600 | $7,000 | $1,850 | $15,000 | $1,200 | $250 | |
| (6) | +1,500 | +$2,000 | | | | | +3,500 | | Service Revenue |
| | $10,700 | + $ 2,000 | + $1,600 | + $7,000 | = $1,850 | + $15,000 | + $4,700 | − $250 | |
| | | $21,300 | | | | $21,300 | | | |

Softbyte recognizes $3,500 in revenue when it performs the service. In exchange for this service, it received $1,500 in Cash and Accounts Receivable of $2,000. This Accounts Receivable represents customers' promises to pay $2,000 to Softbyte in the future. When it later receives collections on account, Softbyte will increase Cash and will decrease Accounts Receivable [see Transaction (9)].

**Transaction (7). Payment of Expenses.** Softbyte pays the following expenses in cash for September: office rent $600, salaries and wages of employees $900, and utilities $200. These payments result in an equal decrease in assets and owner's equity.

**Basic Analysis**

The asset Cash decreases $1,700, and owner's equity decreases $1,700 due to the specific expense categories (Rent Expense, Salaries and Wages Expense, and Utilities Expense).

**Equation Analysis**

| | Assets | | | | = Liabilities | + Owner's Equity | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Cash | + Accounts Receivable | + Supplies | + Equipment | = Accounts Payable | + Owner's Capital | + Revenues | − Expenses | |
| | $10,700 | $2,000 | $1,600 | $7,000 | $1,850 | $15,000 | $4,700 | $ 250 | |
| (7) | −1,700 | | | | | | | −600 | Rent Expense |
| | | | | | | | | −900 | Sal. and Wages Exp. |
| | | | | | | | | −200 | Utilities Exp. |
| | $9,000 | + $2,000 | + $1,600 | + $7,000 | = $1,850 | + $15,000 | + $4,700 | − $1,950 | |
| | | $19,600 | | | | $19,600 | | | |

The two sides of the equation now balance at $19,600. Three lines in the analysis indicate the different types of expenses that have been incurred.

**Transaction (8). Payment of Accounts Payable.** Softbyte pays its $250 *Daily News* bill in cash. The company previously [in Transaction (5)] recorded the bill as an increase in Accounts Payable and a decrease in owner's equity.

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**Basic Analysis**

This cash payment "on account" decreases the asset Cash by $250 and also decreases the liability Accounts Payable by $250.

**Equation Analysis**

| | Assets | | | | | = Liabilities | + Owner's Equity | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Cash | + Accounts Receivable | + Supplies | + Equipment | | = Accounts Payable | + Owner's Capital | + Revenues | − Expenses | |
| | $9,000 | $2,000 | $1,600 | $7,000 | | $1,850 | $15,000 | $4,700 | $1,950 | |
| (8) | −250 | | | | | −250 | | | | |
| | $8,750 | + $2,000 | + $1,600 | + $7,000 | = | $1,600 | + $15,000 | + $4,700 | − $1,950 | |
| | | $19,350 | | | | | $19,350 | | | |

Observe that the payment of a liability related to an expense that has previously been recorded does not affect owner's equity. The company recorded this expense in Transaction (5) and should not record it again.

**Transaction (9). Receipt of Cash on Account.** Softbyte receives $600 in cash from customers who had been billed for services [in Transaction (6)]. Transaction (9) does not change total assets, but it changes the composition of those assets.

**Basic Analysis**

The asset Cash increases $600, and the asset Accounts Receivable decreases $600.

**Equation Analysis**

| | Assets | | | | | = Liabilities | + Owner's Equity | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Cash | + Accounts Receivable | + Supplies | + Equipment | | = Accounts Payable | + Owner's Capital | + Revenues | − Expenses | |
| | $8,750 | $2,000 | $1,600 | $7,000 | | $1,600 | $15,000 | $4,700 | $1,950 | |
| (9) | +600 | −600 | | | | | | | | |
| | $9,350 | + $1,400 | + $1,600 | + $7,000 | = | $1,600 | + $15,000 | + $4,700 | − $1,950 | |
| | | $19,350 | | | | | $19,350 | | | |

Note that the collection of an account receivable for services previously billed and recorded does not affect owner's equity. Softbyte already recorded this revenue in Transaction (6) and should not record it again.

**Transaction (10). Withdrawal of Cash by Owner.** Ray Neal withdraws $1,300 in cash from the business for his personal use. This transaction results in an equal decrease in assets and owner's equity.

**Basic Analysis**

The asset Cash decreases $1,300, and owner's equity decreases $1,300 due to owner's withdrawal (Owner's Drawings).

**Equation Analysis**

| | Assets | | | | | = Liabilities | + Owner's Equity | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cash | + Accounts Receivable | + Supplies | + Equipment | | = Accounts Payable | + Owner's Capital | − Owner's Drawings | + Revenues | − Expenses | |
| | $9,350 | $1,400 | $1,600 | $7,000 | | $1,600 | $15,000 | | $4,700 | $1,950 | |
| (10) | −1,300 | | | | | | | −$1,300 | | | Drawings |
| | $8,050 | + $1,400 | + $1,600 | + $7,000 | = | $1,600 | + $15,000 | − $1,300 | + $4,700 | − $1,950 | |
| | | $18,050 | | | | | $18,050 | | | | |

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Observe that the effect of a cash withdrawal by the owner is the opposite of the effect of an investment by the owner. **Owner's drawings are not expenses.** Expenses are incurred for the purpose of earning revenue. Drawings do not generate revenue. They are a **disinvestment**. Like owner's investment, the company excludes owner's drawings in determining net income.

## Summary of Transactions

**Illustration 1.8** summarizes the September transactions of Softbyte to show their cumulative effect on the basic accounting equation. It also indicates the transaction number and the specific effects of each transaction.

Illustration 1.8 demonstrates some significant facts:

1. Each transaction is analyzed in terms of its effect on:
   a. The three components of the basic accounting equation (assets, liabilities, and owner's equity).
   b. Specific types (kinds) of items within each component (such as the asset Cash).
2. The two sides of the equation must always be equal.
3. The Owner's Capital, Owner's Drawings, Revenues, and Expenses columns indicate the causes of each change in the owner's claim on assets.

**ILLUSTRATION 1.8** **Tabular summary of Softbyte transactions**

| | Assets | | | | = | Liabilities | + | Owner's Equity | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trans-action | Cash | + Accounts Receivable | + Supplies | + Equipment | = | Accounts Payable | + | Owner's Capital | – | Owner's Drawings | + Rev. | – Exp. | |
| (1) | +$15,000 | | | | | | + | $15,000 | | | | | Initial invest. |
| (2) | –7,000 | | | +$7,000 | | | | | | | | | |
| (3) | | | +$1,600 | | | +$1,600 | | | | | | | |
| (4) | +1,200 | | | | | | | | | | +$1,200 | | Service Revenue |
| (5) | | | | | | +250 | | | | | | –$250 | Adver. Expense |
| (6) | +1,500 | +$2,000 | | | | | | | | | +3,500 | | Service Revenue |
| (7) | –600 | | | | | | | | | | | –600 | Rent Expense |
| | –900 | | | | | | | | | | | –900 | Sal./Wages Exp. |
| | –200 | | | | | | | | | | | –200 | Utilities Expense |
| (8) | –250 | | | | | –250 | | | | | | | |
| (9) | +600 | –600 | | | | | | | | | | | |
| (10) | –1,300 | | | | | | | | | –$1,300 | | | Drawings |
| | $ 8,050 | + $1,400 | + $1,600 | + $7,000 | = | $1,600 | + | $15,000 | – | $1,300 | + $4,700 | – $1,950 | |
| | | $18,050 | | | | $18,050 | | | | | | | |

There! You made it through your first transaction analysis. If you feel a bit shaky on any of the transactions, it might be a good idea at this point to get up, take a short break, and come back again for a brief (10- to 15-minute) review of the transactions, to make sure you understand them before you go on to the next section.

### DO IT! 4 | Tabular Analysis

Transactions made by Virmari & Co., a public accounting firm, for the month of August are shown below. Prepare a tabular analysis which shows the effects of these transactions on the expanded accounting equation, similar to that shown in Illustration 1.8.

1. The owner invested $25,000 cash in the business.
2. The company purchased $7,000 of office equipment on credit.
3. The company received $8,000 cash in exchange for services performed.
4. The company paid $850 for this month's rent.
5. The owner withdrew $1,000 cash for personal use.

**ACTION PLAN**

- Analyze the effects of each transaction on the accounting equation.
- Use appropriate category names (not descriptions).
- Keep the accounting equation in balance.

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**Solution**

| | Assets | | | | = | Liabilities | + | Owner's Equity | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trans-action | Cash | + | Equipment | | = | Accounts Payable | + | Owner's Capital | – | Owner's Drawings | + | Revenues | – | Expenses | |
| (1) | +$25,000 | | | | | | | +$25,000 | | | | | | | |
| (2) | | | +$7,000 | | | +$7,000 | | | | | | | | | |
| (3) | +8,000 | | | | | | | | | | | +$8,000 | | | Service Revenue |
| (4) | –850 | | | | | | | | | | | | | –$850 | Rent Expense |
| (5) | –1,000 | | | | | | | | | –$1,000 | | | | | Drawings |
| | $31,150 | + | $7,000 | | = | $7,000 | + | $25,000 | – | $1,000 | + | $8,000 | – | $850 | |
| | $38,150 | | | | | $38,150 | | | | | | | | | |

Related exercise material: **BE1.7, BE1.9, DO IT! 1.4, E1.6, E1.7, and E1.8.**

# The Four Financial Statements

**LEARNING OBJECTIVE 5**

Describe the four financial statements and how they are prepared.

**HELPFUL HINT**

**The income statement, owner's equity statement, and statement of cash flows are all for a *period* of time, whereas the balance sheet is for a *point* in time.**

Companies prepare four financial statements from the summarized accounting data (see Helpful Hint):

1. An **income statement** presents the revenues and expenses and resulting net income or net loss for a specific period of time.
2. An **owner's equity statement** summarizes the changes in owner's equity for a specific period of time.
3. A **balance sheet** reports the assets, liabilities, and owner's equity at a specific date.
4. A **statement of cash flows** summarizes information about the cash inflows (receipts) and outflows (payments) for a specific period of time.

These statements provide relevant financial data for internal and external users. Illustration 1.9 shows the financial statements of Softbyte.

Note that the statements shown in Illustration 1.9 are interrelated:

1. Net income of $2,750 on the **income statement** is added to the beginning balance of owner's capital in the **owner's equity statement**.
2. Owner's capital of $16,450 at the end of the reporting period shown in the **owner's equity statement** is reported on the **balance sheet**.
3. Cash of $8,050 on the **balance sheet** is reported on the **statement of cash flows**.

Also, explanatory notes and supporting schedules are an integral part of every set of financial statements. We illustrate these notes and schedules in later chapters of this textbook.

Be sure to carefully examine the format and content of each statement in Illustration 1.9. We describe the essential features of each in the following sections.

**ALTERNATIVE TERMINOLOGY**

**The income statement is sometimes referred to as the statement of operations, earnings statement, or profit and loss statement.**

***Alternative Terminology** notes introduce synonymous terms you may come across in practice.*

## Income Statement

The income statement reports the revenues and expenses for a specific period of time (see Alternative Terminology). (In Softbyte's case, this is "For the Month Ended September 30, 2020.") Softbyte's income statement is prepared from the data appearing in the owner's equity columns of Illustration 1.8.

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**ILLUSTRATION 1.9**

**Financial statements and their interrelationships**

**Softbyte**
**Income Statement**
**For the Month Ended September 30, 2020**

| | | |
|---|---|---|
| Revenues | | |
| Service revenue | | $ 4,700 |
| Expenses | | |
| Salaries and wages expense | $900 | |
| Rent expense | 600 | |
| Advertising expense | 250 | |
| Utilities expense | 200 | |
| Total expenses | | 1,950 |
| Net income | | **$ 2,750** |

**The heading of each statement identifies the company, the type of statement, and the specific date or time period covered by the statement.**

**Softbyte**
**Owner's Equity Statement**
**For the Month Ended September 30, 2020**

| | | |
|---|---|---|
| Owner's capital, September 1 | | $ –0– |
| Add: Investments | $15,000 | |
| Net income | **2,750** | 17,750 |
| | | 17,750 |
| Less: Drawings | | 1,300 |
| Owner's capital, September 30 | | **$ 16,450** |

**Note that final sums are double-underlined, and negative amounts (in the statement of cash flows) are presented in parentheses.**

**Softbyte**
**Balance Sheet**
**September 30, 2020**

| | |
|---|---|
| **Assets** | |
| Cash | **$ 8,050** |
| Accounts receivable | 1,400 |
| Supplies | 1,600 |
| Equipment | 7,000 |
| Total assets | $ 18,050 |
| **Liabilities and Owner's Equity** | |
| Liabilities | |
| Accounts payable | $ 1,600 |
| Owner's equity | |
| Owner's capital | **16,450** |
| Total liabilities and owner's equity | $ 18,050 |

**Softbyte**
**Statement of Cash Flows**
**For the Month Ended September 30, 2020**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Cash receipts from revenues | | $ 3,300 |
| Cash payments for expenses | | (1,950) |
| Net cash provided by operating activities | | 1,350 |
| Cash flows from investing activities | | |
| Purchase of equipment | | (7,000) |
| Cash flows from financing activities | | |
| Investments by owner | $15,000 | |
| Drawings by owner | (1,300) | 13,700 |
| Net increase in cash | | 8,050 |
| Cash at the beginning of the period | | 0 |
| Cash at the end of the period | | **$ 8,050** |

**The arrows show the interrelationships of the four financial statements.**

**1. Net income is computed first and is needed to determine the ending balance in owner's equity.**
**2. The ending balance in owner's equity is needed in preparing the balance sheet.**
**3. The cash shown on the balance sheet is needed in preparing the statement of cash flows.**

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The income statement lists revenues first, followed by expenses. Finally the statement shows net income (or net loss). **Net income** results when revenues exceed expenses. A **net loss** occurs when expenses exceed revenues.

Although practice varies, we have chosen in our illustrations and homework solutions to list expenses in order of magnitude. (We will consider alternative formats for the income statement in later chapters.)

Note that the income statement does **not** include investment and withdrawal transactions between the owner and the business in measuring net income. For example, as explained earlier, Ray Neal's withdrawal of cash from Softbyte was not regarded as a business expense.

## Owner's Equity Statement

The owner's equity statement reports the changes in owner's equity for a specific period of time. The time period is the same as that covered by the income statement (in Softbyte's case, this is "For the Month Ended September 30, 2020"). Data for the preparation of the owner's equity statement come from the owner's equity columns of the tabular summary (Illustration 1.8) and from the income statement. The first line of the statement shows the beginning owner's equity amount (which was zero at the start of the business). Then come the owner's investments, net income (or loss), and the owner's drawings. This statement indicates **why** owner's equity has increased or decreased during the period.

What if Softbyte had reported a net loss in its first month? Let's assume that during the month of September 2020, Softbyte lost $10,000. **Illustration 1.10** shows the presentation of a net loss in the owner's equity statement.

**ILLUSTRATION 1.10**
**Presentation of net loss**

**Softbyte**
**Owner's Equity Statement**
**For the Month Ended September 30, 2020**

| | | |
|---|---|---|
| Owner's capital, September 1 | | $ –0– |
| Add: Investments | | 15,000 |
| | | 15,000 |
| Less: Drawings | $ 1,300 | |
| Net loss | 10,000 | 11,300 |
| Owner's capital, September 30 | | $ 3,700 |

If the owner makes any additional investments, the company reports them in the owner's equity statement as investments.

## Balance Sheet

Softbyte's balance sheet reports the assets, liabilities, and owner's equity at a specific date (in Softbyte's case, September 30, 2020). The company prepares the balance sheet from the column headings of the tabular summary (Illustration 1.8) and the month-end data shown in its last line.

Observe that the balance sheet lists assets at the top, followed by liabilities and owner's equity. Total assets must equal total liabilities and owner's equity. Softbyte reports only one liability—accounts payable—in its balance sheet. In most cases, there will be more than one liability. When two or more liabilities are involved, a customary way of listing is as shown in **Illustration 1.11**.

**ILLUSTRATION 1.11**
**Presentation of liabilities**

| **Liabilities** | |
|---|---|
| Notes payable | $10,000 |
| Accounts payable | 63,000 |
| Salaries and wages payable | 18,000 |
| **Total liabilities** | **$91,000** |

The balance sheet is a snapshot of the company's financial condition at a specific moment in time (usually the month-end or year-end).

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# Statement of Cash Flows

The primary purpose of a statement of cash flows is to provide financial information about the cash receipts and cash payments of a company for a specific period of time (see **Helpful Hint**). To help investors, creditors, and others in their analysis of a company's cash position, the statement of cash flows reports the cash effects of a company's operating, investing, and financing activities. In addition, the statement shows the net increase or decrease in cash during the period, and the amount of cash at the end of the period.

Reporting the sources, uses, and change in cash is useful because investors, creditors, and others want to know what is happening to a company's most liquid resource. The statement of cash flows provides answers to the following simple but important questions.

1. Where did cash come from during the period?
2. What was cash used for during the period?
3. What was the change in the cash balance during the period?

As shown in Softbyte's statement of cash flows in Illustration 1.9, cash increased $8,050 during the period. Net cash provided by operating activities increased cash $1,350 (cash receipts from revenue less cash payments for expenses). Cash flow from investing activities decreased cash $7,000 (purchase of equipment). And cash flow from financing activities increased cash $13,700 (investment by owner less drawings by owner). At this time, you need not be concerned with how these amounts are determined. Chapter 17 will examine the statement of cash flows in detail.

**HELPFUL HINT**

**The statement of cash flows helps users determine if the company generates enough cash from operations to fund its investing and financing activities.**

## People, Planet, and Profit Insight

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### Beyond Financial Statements

Should we expand our financial statements beyond the income statement, owner's equity statement, balance sheet, and statement of cash flows? Some believe we should take into account ecological and social performance, in addition to financial results, in evaluating a company. The argument is that a company's responsibility lies with anyone who is influenced by its actions. In other words, a company should be interested in benefiting many different parties, instead of only maximizing stockholders' interests.

A socially responsible business does not exploit or endanger any group of individuals. It follows fair trade practices, provides safe environments for workers, and bears responsibility for environmental damage. Granted, measurement of these factors is difficult. How to report this information is also controversial. But many interesting and useful efforts are underway. Throughout this textbook, we provide additional insights into how companies are attempting to meet the challenge of measuring and reporting their contributions to society, as well as their financial results, to stockholders.

**Why might a company's stockholders be interested in its environmental and social performance? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 5 | Financial Statement Items

Presented below is selected information related to Flanagan Company at December 31, 2020. Flanagan reports financial information monthly.

| | | | |
|---|---|---|---|
| Equipment | $10,000 | Utilities Expense | $ 4,000 |
| Cash | 8,000 | Accounts Receivable | 9,000 |
| Service Revenue | 36,000 | Salaries and Wages Expense | 7,000 |
| Rent Expense | 11,000 | Notes Payable | 16,500 |
| Accounts Payable | 2,000 | Owner's Drawings | 5,000 |

**a.** Determine the total assets of Flanagan Company at December 31, 2020.

**b.** Determine the net income that Flanagan Company reported for December 2020.

**c.** Determine the owner's equity of Flanagan Company at December 31, 2020.

**ACTION PLAN**

- **Remember the basic accounting equation: assets must equal liabilities plus owner's equity.**
- **Review previous financial statements to determine how total assets, net income, and owner's equity are computed.**

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**Solution**

**a.** The total assets are $27,000, comprised of Cash $8,000, Accounts Receivable $9,000, and Equipment $10,000.

**b.** Net income is $14,000, computed as follows.

| | | |
|---|---|---|
| Revenues | | |
| Service revenue | | $36,000 |
| Expenses | | |
| Rent expense | $11,000 | |
| Salaries and wages expense | 7,000 | |
| Utilities expense | 4,000 | |
| Total expenses | | 22,000 |
| Net income | | $14,000 |

**c.** The ending owner's equity of Flanagan Company is $8,500. By rewriting the accounting equation, we can compute owner's equity as assets minus liabilities, as follows.

| | | |
|---|---|---|
| Total assets [as computed in (a)] | | $27,000 |
| Less: Liabilities | | |
| Notes payable | $16,500 | |
| Accounts payable | 2,000 | 18,500 |
| Owner's equity | | $ 8,500 |

Note that it is not possible to determine the company's owner's equity in any other way because the beginning total for owner's equity is not provided.

Related exercise material: **BE1.10, BE1.11, DO IT! 1.5, E1.9, E1.10, E1.11, E1.12, E1.13, E1.14, E1.15, E1.16 , E1.17, and E1.18**

# Appendix 1A Career Opportunities in Accounting

**LEARNING OBJECTIVE *6**

Explain the career opportunities in accounting.

Why is accounting such a popular major and career choice? First, there are a lot of jobs. In many cities in recent years, the demand for accountants exceeded the supply. Not only are there a lot of jobs, but there are a wide array of opportunities. As one accounting organization observed, "accounting is one degree with 360 degrees of opportunity."

Accounting is also hot because it is obvious that accounting matters. Interest in accounting has increased, ironically, because of the attention caused by the accounting failures of companies such as **Enron** and **WorldCom**. These widely publicized scandals revealed the important role that accounting plays in society. Most people want to make a difference, and an accounting career provides many opportunities to contribute to society. Finally, the Sarbanes-Oxley Act (SOX) significantly increased the accounting and internal control requirements for corporations. This dramatically increased demand for professionals with accounting training.

Accountants are in such demand that it is not uncommon for accounting students to have accepted a job offer a year before graduation. As the following discussion reveals, the job options of people with accounting degrees are virtually unlimited.

## Public Accounting

Individuals in **public accounting** offer expert service to the general public, in much the same way that doctors serve patients and lawyers serve clients. A major portion of public accounting

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involves **auditing**. In auditing, a certified public accountant (CPA) examines company financial statements and provides an opinion as to how accurately the financial statements present the company's results and financial position. Analysts, investors, and creditors rely heavily on these "audit opinions," which CPAs have the exclusive authority to issue.

**Taxation** is another major area of public accounting. The work that tax specialists perform includes tax advice and planning, preparing tax returns, and representing clients before governmental agencies such as the Internal Revenue Service.

A third area in public accounting is **management consulting**. It ranges from installing basic accounting software or highly complex enterprise resource planning systems, to performing support services for major marketing projects and merger and acquisition activities.

Many CPAs are entrepreneurs. They form small- or medium-sized practices that frequently specialize in tax or consulting services.

## Private Accounting

Instead of working in public accounting, you might choose to be an employee of a for-profit company such as **Starbucks**, **Alphabet**, or **PepsiCo**. In **managerial (or private) accounting**, you would be involved in activities such as cost accounting (finding the cost of producing specific products), budgeting, accounting information system design and support, and tax planning and preparation. You might also be a member of your company's internal audit team. In response to SOX, the internal auditors' job of reviewing the company's operations to ensure compliance with company policies and to increase efficiency has taken on increased importance.

Alternatively, many accountants work for not-for-profit organizations such as the **Red Cross** or the **Bill and Melinda Gates Foundation**, or for museums, libraries, or performing arts organizations.

## Governmental Accounting

Another option is to pursue one of the many accounting opportunities in governmental agencies. For example, the Internal Revenue Service (IRS), Federal Bureau of Investigation (FBI), and the Securities and Exchange Commission (SEC) all employ accountants. The FBI has a stated goal that at least 15% of its new agents should be CPAs. There is also a very high demand for accounting educators at public colleges and universities and in state and local governments.

## Forensic Accounting

**Forensic accounting** uses accounting, auditing, and investigative skills to conduct investigations into theft and fraud. It is listed among the top 20 career paths of the future. The job of forensic accountants is to catch the perpetrators of the estimated $600 billion per year of theft and fraud occurring at U.S. companies. This includes tracing money-laundering and identity-theft activities as well as tax evasion. Insurance companies hire forensic accountants to detect frauds such as arson, and law offices employ forensic accountants to identify marital assets in divorces. Forensic accountants often have FBI, IRS, or similar government experience.

## "Show Me the Money"

How much can a new accountant make? Take a look at the average salaries for college graduates in public and private accounting listed in **Illustration 1A.1**. Keep in mind if you also have a CPA license, you'll make 10–15% more when you start out.

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**ILLUSTRATION 1A.1**
**Salary estimates for jobs in public and corporate accounting**

| Employer | Jr. Level (0–3 yrs.) | Sr. Level (4–6 yrs.) |
|---|---|---|
| Public accounting (large firm) | $63,250–$83,250 | $78,500–$106,500 |
| Public accounting (small firm) | $51,500–$60,500 | $63,750–$ 81,500 |
| Corporate accounting (large company) | $53,750–$69,500 | $68,750–$ 87,750 |
| Corporate accounting (small company) | $45,000–$59,000 | $57,500–$ 70,000 |

**Illustration 1A.2** offers some examples of upper-level salaries for managers in corporate accounting. Note that geographic region, experience, education, CPA certification, and company size each play a role in determining salary.

**ILLUSTRATION 1A.2**
**Upper-level management salaries in corporate accounting**

| Position | Large Company | Small to Medium Company |
|---|---|---|
| Chief financial officer | $207,000–$465,750 | $105,250–$208,750 |
| Corporate controller | $140,000–$224,750 | $ 92,000–$161,250 |
| Tax manager | $112,000–$158,250 | $ 88,000–$124,750 |

*The Review and Practice section provides opportunities for students to review key concepts and terms as well as complete multiple-choice questions, exercises, and a comprehensive problem. Detailed solutions are also included.*

# Review and Practice

## Learning Objectives Review

### 1 Identify the activities and users associated with accounting.

Accounting is an information system that identifies, records, and communicates the economic events of an organization to interested users. The major users and uses of accounting are as follows. (a) Management uses accounting information to plan, organize, and run the business. (b) Investors (owners) decide whether to buy, hold, or sell their financial interests on the basis of accounting data. (c) Creditors (suppliers and bankers) evaluate the risks of granting credit or lending money on the basis of accounting information. Other groups that use accounting information are taxing authorities, regulatory agencies, customers, and labor unions.

### 2 Explain the building blocks of accounting: ethics, principles, and assumptions.

Ethics are the standards of conduct by which actions are judged as right or wrong. Effective financial reporting depends on sound ethical behavior.

Generally accepted accounting principles are a common set of standards used by accountants. The primary accounting standard-setting body in the United States is the Financial Accounting Standards Board. The monetary unit assumption requires that companies include in the accounting records only transaction data that can be expressed in terms of money. The economic entity assumption requires that the activities of each economic entity be kept separate from the activities of its owner(s) and other economic entities.

### 3 State the accounting equation, and define its components.

The basic accounting equation is:

$$\text{Assets} = \text{Liabilities} + \text{Owner's Equity}$$

Assets are resources a business owns. Liabilities are creditorship claims on total assets. Owner's equity is the ownership claim on total assets.

The expanded accounting equation is:

$$\text{Assets} = \text{Liabilities} + \text{Owner's Capital} - \text{Owner's Drawings} + \text{Revenues} - \text{Expenses}$$

Investments by owners (assets the owner puts into the business) are recorded in a category called owner's capital. Owner's drawings are the withdrawal of assets by the owner for personal use. Revenues are the gross increase in owner's equity from business activities for the purpose of earning income. Expenses are the costs of assets consumed or services used in the process of earning revenue.

### 4 Analyze the effects of business transactions on the accounting equation.

Each business transaction must have a dual effect on the accounting equation. For example, if an individual asset increases, there must be

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a corresponding (1) decrease in another asset, (2) increase in a specific liability, or (3) increase in owner's equity.

**5 Describe the four financial statements and how they are prepared.**

An income statement presents the revenues and expenses, and resulting net income or net loss, for a specific period of time. An owner's equity statement summarizes the changes in owner's equity for a specific period of time. A balance sheet reports the assets, liabilities, and owner's equity at a specific date. A statement of cash flows summarizes information about the cash inflows (receipts) and outflows (payments) for a specific period of time.

***6 Explain the career opportunities in accounting.**

Accounting offers many different jobs in fields such as public and private accounting, governmental, and forensic accounting. Accounting is a popular major because there are many different types of jobs, with unlimited potential for career advancement.

## Glossary Review

**Accounting** The information system that identifies, records, and communicates the economic events of an organization to interested users. (p. 1-3).

**Accounting information system** The system of collecting and processing transaction data and communicating financial information to decision-makers. (p. 1-13)

**Assets** Resources a business owns. (p. 1-11).

***Auditing** The examination of financial statements by a certified public accountant in order to express an opinion as to the fairness of presentation. (p. 1-25).

**Balance sheet** A financial statement that reports the assets, liabilities, and owner's equity at a specific date. (p. 1-20).

**Basic accounting equation** Assets = Liabilities + Owner's equity. (p. 1-11).

**Bookkeeping** A part of the accounting process that involves only the recording of economic events. (p. 1-4).

**Convergence** The process of reducing the differences between U.S. GAAP and IFRS. (p. 1-8).

**Corporation** A business organized as a separate legal entity under state corporation law, having ownership divided into transferable shares of stock. (p. 1-10).

**Drawings** Withdrawal of cash or other assets from an unincorporated business for the personal use of the owner(s). (p. 1-12).

**Economic entity assumption** An assumption that requires that the activities of the entity be kept separate and distinct from the activities of its owner and all other economic entities. (p. 1-9).

**Ethics** The standards of conduct by which actions are judged as right or wrong, honest or dishonest, fair or not fair. (p. 1-7).

**Expanded accounting equation** Assets = Liabilities + Owner's capital – Owner's drawings + Revenues – Expenses. (p. 1-12).

**Expenses** The cost of assets consumed or services used in the process of generating revenue. (p. 1-12).

**Fair value principle** An accounting principle stating that assets and liabilities should be reported at fair value (the price received to sell an asset or settle a liability). (p. 1-9).

**Faithful representation** Numbers and descriptions match what really existed or happened—they are factual. (p. 1-8).

**Financial accounting** The field of accounting that provides economic and financial information for investors, creditors, and other external users. (p. 1-5).

**Financial Accounting Standards Board (FASB)** A private organization that establishes generally accepted accounting principles (GAAP) in the United States. (p. 1-8).

***Forensic accounting** An area of accounting that uses accounting, auditing, and investigative skills to conduct investigations into theft and fraud. (p. 1-25).

**Generally accepted accounting principles (GAAP)** Common standards that indicate how to report economic events. (p. 1-8).

**Historical cost principle** An accounting principle that states that companies should record assets at their cost. (p. 1-8).

**Income statement** A financial statement that presents the revenues and expenses and resulting net income or net loss of a company for a specific period of time. (p. 1-20).

**International Accounting Standards Board (IASB)** An accounting standard-setting body that issues standards adopted by many countries outside of the United States. (p. 1-8).

**International Financial Reporting Standards (IFRS)** International accounting standards set by the International Accounting Standards Board (IASB). (p. 1-8).

**Investments by owner** The assets an owner puts into the business. (p. 1-12).

**Liabilities** Creditor claims against total assets. (p. 1-11).

***Management consulting** An area of public accounting ranging from development of accounting and computer systems to support services for marketing projects and merger and acquisition activities. (p. 1-25).

**Managerial accounting** The field of accounting that provides internal reports to help users make decisions about their companies. (p. 1-5).

**Monetary unit assumption** An assumption stating that companies include in the accounting records only transaction data that can be expressed in terms of money. (p. 1-9).

**Net income** The amount by which revenues exceed expenses. (p. 1-22).

**Net loss** The amount by which expenses exceed revenues. (p. 1-22).

**Owner's equity** The ownership claim on total assets. (p. 1-12).

**Owner's equity statement** A financial statement that summarizes the changes in owner's equity for a specific period of time. (p. 1-20).

**Partnership** A business owned by two or more persons associated as partners. (p. 1-9).

**Proprietorship** A business owned by one person. (p. 1-9).

***Public accounting** An area of accounting in which the accountant offers expert service to the general public. (p. 1-24).

**Relevance** Financial information that is capable of making a difference in a decision. (p. 1-8).

**Revenues** The increases in assets or decreases in liabilities resulting from the sale of goods or the performance of services in the normal course of business. (p. 1-12).

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**Sarbanes-Oxley Act (SOX)** Law passed by Congress intended to reduce unethical corporate behavior. (p. 1-6).

**Securities and Exchange Commission (SEC)** A governmental agency that oversees U.S. financial markets and accounting standard-setting bodies. (p. 1-8).

**Statement of cash flows** A financial statement that summarizes information about the cash inflows (receipts) and cash outflows (payments) for a specific period of time. (p. 1-20).

***Taxation** An area of public accounting involving tax advice, tax planning, preparing tax returns, and representing clients before governmental agencies. (p. 1-25).

**Transactions** The economic events of a business that are recorded by accountants. (p. 1-14).

## Practice Multiple-Choice Questions

**1. (LO 1)** Which of the following is **not** a step in the accounting process?

**a.** Identification. **c.** Recording.
**b.** Economic entity. **d.** Communication.

**2. (LO 1)** Which of the following statements about users of accounting information is **incorrect**?

**a.** Management is an internal user.
**b.** Taxing authorities are external users.
**c.** Present creditors are external users.
**d.** Regulatory authorities are internal users.

**3. (LO 2)** The historical cost principle states that:

**a.** assets should be initially recorded at cost and adjusted when the fair value changes.
**b.** activities of an entity are to be kept separate and distinct from its owner.
**c.** assets should be recorded at their cost.
**d.** only transaction data capable of being expressed in terms of money be included in the accounting records.

**4. (LO 2)** Which of the following statements about basic assumptions is **correct**?

**a.** Basic assumptions are the same as accounting principles.
**b.** The economic entity assumption states that there should be a particular unit of accountability.
**c.** The monetary unit assumption enables accounting to measure employee morale.
**d.** Partnerships are not economic entities.

**5. (LO 2)** The three types of business entities are:

**a.** proprietorships, small businesses, and partnerships.
**b.** proprietorships, partnerships, and corporations.
**c.** proprietorships, partnerships, and large businesses.
**d.** financial, manufacturing, and service companies.

**6. (LO 3)** Net income will result during a time period when:

**a.** assets exceed liabilities.
**b.** assets exceed revenues.
**c.** expenses exceed revenues.
**d.** revenues exceed expenses.

**7. (LO 3)** As of December 31, 2020, Kent Company has assets of $3,500 and owner's equity of $2,000. What are the liabilities for Kent Company as of December 31, 2020?

**a.** $1,500. **c.** $2,500.
**b.** $1,000. **d.** $2,000.

**8. (LO 4)** Performing services on account will have the following effects on the components of the basic accounting equation:

**a.** increase assets and decrease owner's equity.
**b.** increase assets and increase owner's equity.
**c.** increase assets and increase liabilities.
**d.** increase liabilities and increase owner's equity.

**9. (LO 4)** Which of the following events is **not** recorded in the accounting records?

**a.** Equipment is purchased on account.
**b.** An employee is terminated.
**c.** A cash investment is made into the business.
**d.** The owner withdraws cash for personal use.

**10. (LO 4)** During 2020, Bruske Company's assets decreased $50,000 and its liabilities decreased $50,000. Its owner's equity therefore:

**a.** increased $50,000. **c.** decreased $100,000.
**b.** decreased $50,000. **d.** did not change.

**11. (LO 4)** Payment of an account payable affects the components of the accounting equation in the following way.

**a.** Decreases owner's equity and decreases liabilities.
**b.** Increases assets and decreases liabilities.
**c.** Decreases assets and increases owner's equity.
**d.** Decreases assets and decreases liabilities.

**12. (LO 5)** Which of the following statements is **false**?

**a.** A statement of cash flows summarizes information about the cash inflows (receipts) and outflows (payments) for a specific period of time.
**b.** A balance sheet reports the assets, liabilities, and owner's equity at a specific date.
**c.** An income statement presents the revenues, expenses, changes in owner's equity, and resulting net income or net loss for a specific period of time.
**d.** An owner's equity statement summarizes the changes in owner's equity for a specific period of time.

**13. (LO 5)** On the last day of the period, Alan Cesska Company buys a $900 machine on credit. This transaction will affect the:

**a.** income statement only.

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**b.** balance sheet only.

**c.** income statement and owner's equity statement only.

**d.** income statement, owner's equity statement, and balance sheet.

**14.** **(LO 5)** The financial statement that reports assets, liabilities, and owner's equity is the:

**a.** income statement.

**b.** owner's equity statement.

**c.** balance sheet.

**d.** statement of cash flows.

***15.** **(LO 6)** Services performed by a public accountant include:

**a.** auditing, taxation, and management consulting.

**b.** auditing, budgeting, and management consulting.

**c.** auditing, budgeting, and cost accounting.

**d.** auditing, budgeting, and management consulting.

### Solutions

**1. b.** Economic entity is not one of the steps in the accounting process. The other choices are true because (a) identification is the first step in the accounting process, (c) recording is the second step in the accounting process, and (d) communication is the third and final step in the accounting process.

**2. d.** Regulatory authorities are external, not internal, users of accounting information. The other choices are true statements.

**3. c.** The historical cost principle states that assets should be recorded at their cost. The other choices are incorrect because (a) the historical cost principle does not say that assets should be adjusted for changes in fair value, (b) describes the economic entity assumption, and (d) describes the monetary unit assumption.

**4. b.** The economic entity assumption states that there should be a particular unit of accountability. The other choices are incorrect because (a) basic assumptions are not the same as accounting principles, (c) the monetary unit assumption allows accounting to measure economic events, and (d) partnerships are economic entities.

**5. b.** Proprietorships, partnerships, and corporations are the three types of business entities. Choices (a) and (c) are incorrect because small and large businesses only denote the sizes of businesses. Choice (d) is incorrect because financial, manufacturing, and service companies are types of businesses, not business entities.

**6. d.** Net income results when revenues exceed expenses. The other choices are incorrect because (a) assets and liabilities are not used in the computation of net income; (b) revenues, not assets, are included in the computation of net income; and (c) when expenses exceed revenues, a net loss results.

**7. a.** Using a variation of the basic accounting equation, Assets − Owner's equity = Liabilities, $3,500 − $2,000 = $1,500. Therefore, choices (b) $1,000, (c) $2,500, and (d) $2,000 are incorrect.

**8. b.** When services are performed on account, assets are increased and owner's equity is increased. The other choices are incorrect because when services are performed on account (a) owner's equity is increased, not decreased; (c) liabilities are not affected; and (d) owner's equity is increased and liabilities are not affected.

**9. b.** If an employee is terminated, this represents an activity of a company, not a business transaction. Assets, liabilities, and owner's equity are not affected. Thus, there is no effect on the accounting equation. The other choices are incorrect because they are all recorded: (a) when equipment is purchased on account, both assets and liabilities increase; (c) when a cash investment is made into a business, both assets and owner's equity increase; and (d) when an owner withdraws cash for personal use, both assets and owner's equity decrease.

**10. d.** In this situation, owner's equity does not change because only assets and liabilities decreased $50,000. Therefore, the other choices are incorrect.

**11. d.** Payment of an account payable results in an equal decrease of assets (cash) and liabilities (accounts payable). The other choices are incorrect because payment of an account payable (a) does not affect owner's equity, (b) does not increase assets, and (c) does not affect owner's equity.

**12. c.** An income statement represents the revenues, expenses, and the resulting net income or net loss for a specific period of time but not the changes in owner's equity. The other choices are true statements.

**13. b.** This transaction will cause assets to increase by $900 and liabilities to increase by $900. The other choices are incorrect because this transaction (a) will have no effect on the income statement, (c) will have no effect on the income statement or the owner's equity statement, and (d) will affect the balance sheet but not the income statement or the owner's equity statement.

**14. c.** The balance sheet is the statement that reports assets, liabilities and owner's equity. The other choices are incorrect because (a) the income statement reports revenues and expenses, (b) the owner's equity statement reports details about owner's equity, and (d) the statement of cash flows reports inflows and outflows of cash.

***15. a.** Auditing, taxation, and management consulting are all services performed by public accountants. The other choices are incorrect because public accountants do not perform budgeting or cost accounting.

## Practice Brief Exercises

**1.** **(LO 3)** At the beginning of the year, Ortiz Company had total assets of $900,000 and total liabilities of $440,000. Answer the following questions. *Use basic accounting equation.*

**a.** If total assets decreased $100,000 during the year and total liabilities increased $80,000 during the year, what is the amount of owner's equity at the end of the year?

**b.** During the year, total liabilities decreased $100,000 and owner's equity increased $200,000. What is the amount of total assets at the end of the year?

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**c.** If total assets increased $50,000 during the year and owner's equity increased $60,000 during the year, what is the amount of total liabilities at the end of the year?

### Solution

**1. a.** ($900,000 − $440,000) − $100,000 − $80,000 = $280,000 owner's equity

**b.** $900,000 − $100,000 + $200,000 = $1,000,000 total assets

**c.** $440,000 − $60,000 + $50,000 = $430,000 total liabilities

*Determine effect of transactions on basic accounting equation*

**2. (LO 4)** Presented below are three business transactions. List the letters (a), (b), and (c) with columns for assets, liabilities and owner's equity. For each column, indicate whether the transactions increased (+), decreased (−), or had no effect (NE) on assets, liabilities, and owner's equity.

**a.** Purchased equipment on account.

**b.** Withdrawal of cash by owner.

**c.** Paid expenses in cash.

### Solution

| | Assets | Liabilities | Owner's Equity |
|---|---|---|---|
| **2. a.** | + | + | NE |
| **b.** | − | NE | − |
| **c.** | − | NE | − |

*Determine effect of transactions on basic accounting equation.*

**3. (LO 4)** Follow the same format as in **Practice Brief Exercise 2.** Determine the effect on assets, liabilities, and owner's equity of the following three transactions.

**a.** Performed accounting services for clients for cash.

**b.** Borrowed cash from a bank on a note payable.

**c.** Paid cash for rent for the month.

### Solution

| | Assets | Liabilities | Owner's Equity |
|---|---|---|---|
| **3. a.** | + | NE | + |
| **b.** | + | + | NE |
| **c.** | − | NE | − |

*Determine where items appear on financial statements.*

**4. (LO 5)** **Financial Statement** Indicate whether the following items would appear on the income statement (IS), balance sheet (BS), or owner's equity statement (OE).

**a.** Owner's capital.

**b.** Cash.

**c.** Salaries and wages expense.

**d.** Service revenue.

**e.** Accounts payable.

### Solution

| | | |
|---|---|---|
| **4. a.** | Owner's capital | OE, BS |
| **b.** | Cash | BS |
| **c.** | Salaries and wages expense | IS |
| **d.** | Service revenue | IS |
| **e.** | Accounts payable | BS |

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**5. (LO 5) Financial Statement** Presented below in alphabetical order are balance sheet items for Feagler Company at December 31, 2020. Carole Feagler is the owner of the company. Prepare a balance sheet following the format of Illustration 1.9.

*Prepare a balance sheet.*

| | |
|---|---|
| Accounts receivable | $12,500 |
| Cash | 38,000 |
| Notes payable | 40,000 |
| Owner's capital | 10,500 |

**Solution**

**5.**

**Feagler Company**
**Balance Sheet**
**December 31, 2020**

**Assets**

| | |
|---|---|
| Cash | $38,000 |
| Accounts receivable | 12,500 |
| Total assets | $50,500 |

**Liabilities and Owner's Equity**

| | |
|---|---|
| Liabilities | |
| Notes payable | $40,000 |
| Owner's equity | |
| Owner's capital | 10,500 |
| Total liabilities and owner's equity | $50,500 |

## Practice Exercises

**1. (LO 3, 4)** Selected transactions for Fabulous Flora Company are listed below.

*Analyze the effect of transactions.*

1. Made cash investment to start business.
2. Purchased equipment on account.
3. Paid salaries.
4. Billed customers for services performed.
5. Received cash from customers billed in (4).
6. Withdrew cash for owner's personal use.
7. Incurred advertising expense on account.
8. Purchased additional equipment for cash.
9. Received cash from customers when service was performed.

**Instructions**

List the numbers of the above transactions and describe the effect of each transaction on assets, liabilities, and owner's equity. For example, the first answer is: (1) Increase in assets and increase in owner's equity.

**Solution**

**1.** **1.** Increase in assets and increase in owner's equity.
**2.** Increase in assets and increase in liabilities.
**3.** Decrease in assets and decrease in owner's equity.
**4.** Increase in assets and increase in owner's equity.
**5.** Increase in assets and decrease in assets.
**6.** Decrease in assets and decrease in owner's equity.

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7. Increase in liabilities and decrease in owner's equity.
8. Increase in assets and decrease in assets.
9. Increase in assets and increase in owner's equity.

*Analyze the effect of transactions on assets, liabilities, and owner's equity.*

**2. (LO 3, 4)** Alma's Payroll Services Company entered into the following transactions during May 2020.

1. Purchased computers for $15,000 from Bytes of Data on account.
2. Paid $3,000 cash for May rent on storage space.
3. Received $12,000 cash from customers for contracts billed in April.
4. Performed payroll services for Magic Construction Company for $2,500 cash.
5. Paid Northern Ohio Power Co. $7,000 cash for energy usage in May.
6. Alma invested an additional $25,000 in the business.
7. Paid Bytes of Data for the computers purchased in (1) above.
8. Incurred advertising expense for May of $900 on account.

**Instructions**

Indicate with the appropriate letter whether each of the transactions above results in:

a. an increase in assets and a decrease in assets.
b. an increase in assets and an increase in owner's equity.
c. an increase in assets and an increase in liabilities.
d. a decrease in assets and a decrease in owner's equity.
e. a decrease in assets and a decrease in liabilities.
f. an increase in liabilities and a decrease in owner's equity.
g. an increase in owner's equity and a decrease in liabilities.

**Solution**

2. 1. c 2. d 3. a 4. b 5. d 6. b 7. e 8. f

## Practice Problem

*Prepare a tabular presentation and financial statements.*

**(LO 4, 5)** Joan Robinson opens her own law office on July 1, 2020. During the first month of operations, the following transactions occurred.

1. Joan invested $11,000 in cash in the law practice.
2. Paid $800 for July rent on office space.
3. Purchased equipment on account $3,000.
4. Performed legal services for clients for cash $1,500.
5. Borrowed $700 cash from a bank on a note payable.
6. Performed legal services for client on account $2,000.
7. Paid monthly expenses: salaries and wages $500, utilities $300, and advertising $100.
8. Joan withdrew $1,000 cash for personal use.

**Instructions**

a. Prepare a tabular summary of the transactions.
b. **Financial Statement** Prepare the income statement, owner's equity statement, and balance sheet at July 31, 2020, for Joan Robinson, Attorney.

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## Solution

**a.**

| | Assets | | | | | = | Liabilities | | | + | Owner's Equity | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trans-action | Cash | + | Accounts Receivable | + | Equipment | = | Notes Payable | + | Accounts Payable | + | Owner's Capital | − | Owner's Drawings | + | Revenues | − | Expenses |
| 1. | +$11,000 | | | | | = | | | | | +$11,000 | | | | | | |
| 2. | −800 | | | | | | | | | | | | | | | | −$800 |
| 3. | | | | | +$3,000 | = | | | +$3,000 | | | | | | | | |
| 4. | +1,500 | | | | | | | | | | | | | | +$1,500 | | |
| 5. | +700 | | | | | | +$700 | | | | | | | | | | |
| 6. | | | +$2,000 | | | | | | | | | | | | +2,000 | | |
| 7. | −500 | | | | | | | | | | | | | | | | −500 |
| | −300 | | | | | | | | | | | | | | | | −300 |
| | −100 | | | | | | | | | | | | | | | | −100 |
| 8. | −1,000 | | | | | | | | | | | | −$1,000 | | | | |
| | $10,500 | + | $2,000 | + | $3,000 | = | $700 | + | $3,000 | + | $11,000 | − | $1,000 | + | $3,500 | − | $1,700 |
| | | | $15,500 | | | | | | | | $15,500 | | | | | | |

**b.**

**Joan Robinson, Attorney**
**Income Statement**
**For the Month Ended July 31, 2020**

| | | |
|---|---|---|
| Revenues | | |
| Service revenue | | $3,500 |
| Expenses | | |
| Rent expense | $800 | |
| Salaries and wages expense | 500 | |
| Utilities expense | 300 | |
| Advertising expense | 100 | |
| Total expenses | | 1,700 |
| Net income | | $1,800 |

**Joan Robinson, Attorney**
**Owner's Equity Statement**
**For the Month Ended July 31, 2020**

| | | |
|---|---|---|
| Owner's capital, July 1 | | $ 0 |
| Add: Investments | $11,000 | |
| Net income | 1,800 | 12,800 |
| | | 12,800 |
| Less: Drawings | | 1,000 |
| Owner's capital, July 31 | | $11,800 |

**Joan Robinson, Attorney**
**Balance Sheet**
**July 31, 2020**

| | |
|---|---|
| **Assets** | |
| Cash | $10,500 |
| Accounts receivable | 2,000 |
| Equipment | 3,000 |
| Total assets | $15,500 |
| **Liabilities and Owner's Equity** | |
| Liabilities | |
| Notes payable | $ 700 |
| Accounts payable | 3,000 |
| Total liabilities | 3,700 |
| Owner's equity | |
| Owner's capital | 11,800 |
| Total liabilities and owner's equity | $15,500 |

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## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendix to the chapter.

## Questions

**1.** "Accounting is ingrained in our society and it is vital to our economic system." Do you agree? Explain.

**2.** Identify and describe the steps in the accounting process.

**3.** (a) Who are internal users of accounting data? (b) How does accounting provide relevant data to these users?

**4.** What uses of financial accounting information are made by (a) investors and (b) creditors?

**5.** "Bookkeeping and accounting are the same." Do you agree? Explain.

**6.** Benton Travel Agency purchased land for $90,000 cash on December 10, 2020. At December 31, 2020, the land's value has increased to $92,000. What amount should be reported for land on Benton's balance sheet at December 31, 2020? Explain.

**7.** What is the monetary unit assumption?

**8.** What is the economic entity assumption?

**9.** What are the three basic forms of business organizations for profit-oriented enterprises?

**10.** Helen Rupp is the owner of a successful printing shop. Recently, her business has been increasing, and Helen has been thinking about changing the organization of her business from a proprietorship to a corporation. Discuss some of the advantages Helen would enjoy if she were to incorporate her business.

**11.** What is the basic accounting equation?

**12.** **a.** Define the terms assets, liabilities, and owner's equity.

**b.** What items affect owner's equity?

**13.** Which of the following items are liabilities of Siebers Jewelry Stores?

**a.** Cash.

**b.** Accounts payable.

**c.** Owner's drawings.

**d.** Accounts receivable.

**e.** Supplies.

**f.** Equipment.

**g.** Salaries and wages payable.

**h.** Service revenue.

**i.** Rent expense.

**14.** Can a business enter into a transaction in which only the left side of the basic accounting equation is affected? If so, give an example.

**15.** Are the following events recorded in the accounting records? Explain your answer in each case.

**a.** The owner of the company dies.

**b.** Supplies are purchased on account.

**c.** An employee is fired.

**d.** The owner of the business withdraws cash from the business for personal use.

**16.** Indicate how the following business transactions affect the basic accounting equation.

**a.** Paid cash for janitorial services.

**b.** Purchased equipment for cash.

**c.** Invested cash in the business.

**d.** Paid accounts payable in full.

**17.** Listed below are some items found in the financial statements of Tony Gruber Co. Indicate in which financial statement(s) the following items would appear.

**a.** Service revenue.

**b.** Equipment.

**c.** Advertising expense.

**d.** Accounts receivable.

**e.** Owner's capital.

**f.** Salaries and wages payable.

**18.** In February 2020, Ola Gott invested an additional $12,000 in her business, Gott's Pharmacy, which is organized as a proprietorship. Gott's accountant, Sal Costa, recorded this receipt as an increase in cash and revenues. Is this treatment appropriate? Why or why not?

**19.** "A company's net income appears directly on the income statement and the owner's equity statement, and it is included indirectly in the company's balance sheet." Do you agree? Explain.

**20.** Bayler Enterprises had a capital balance of $186,000 at the beginning of the period. At the end of the accounting period, the capital balance was $189,000.

**a.** Assuming no additional investment or withdrawals during the period, what is the net income for the period?

**b.** Assuming an additional investment of $13,000 but no withdrawals during the period, what is the net income for the period?

**21.** Summarized operations for Bayles Co. for the month of July are as follows.

Revenues recognized: for cash $20,000; on account $70,000.

Expenses incurred: for cash $26,000; on account $40,000.

Indicate for Bayles Co. (a) the total revenues, (b) the total expenses, and (c) net income for the month of July.

**22.** The basic accounting equation is Assets = Liabilities + Owner's equity. Replacing the words in that equation with dollar amounts, what is **Apple**'s accounting equation at September 26, 2015? (*Hint:* Owner's equity is equivalent to shareholders' equity.)

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## Brief Exercises

**BE1.1 (LO 3)** Presented below is the basic accounting equation. Determine the missing amounts. *Use basic accounting equation.*

| | Assets | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|---|
| **a.** | $90,000 | | $50,000 | | ? |
| **b.** | ? | | $44,000 | | $70,000 |
| **c.** | $94,000 | | ? | | $53,000 |

**BE1.2 (LO 3)** Given the accounting equation, answer each of the following questions. *Use basic accounting equation.*

**a.** The liabilities of Berber Company are $120,000 and the owner's equity is $230,000. What is the amount of Berber Company's total assets?

**b.** The total assets of Berber Company are $190,000 and its owner's equity is $89,000. What is the amount of its total liabilities?

**c.** The total assets of Berber Company are $900,000 and its liabilities are equal to one-half of its total assets. What is the amount of Berber Company's owner's equity?

**BE1.3 (LO 3)** At the beginning of the year, Gilles Company had total assets of $800,000 and total liabilities of $300,000. Answer the following questions. *Use basic accounting equation.*

**a.** If total assets increased $150,000 during the year and total liabilities decreased $60,000, what is the amount of owner's equity at the end of the year?

**b.** During the year, total liabilities increased $100,000 and owner's equity decreased $70,000. What is the amount of total assets at the end of the year?

**c.** If total assets decreased $80,000 and owner's equity increased $120,000 during the year, what is the amount of total liabilities at the end of the year?

**BE1.4 (LO 3)** Use the expanded accounting equation to answer each of the following questions. *Solve expanded accounting equation.*

**a.** The liabilities of Platt Company are $90,000. Owner's capital is $150,000; drawings are $40,000; revenues, $450,000; and expenses, $340,000. What is the amount of Platt Company's total assets?

**b.** The total assets of Sierra Company are $57,000. Owner's capital is $35,000; drawings are $7,000; revenues, $52,000; and expenses, $35,000. What is the amount of the company's total liabilities?

**c.** The total assets of Birch Co. are $660,000 and its liabilities are equal to two-thirds of its total assets. What is the amount of Birch Co.'s owner's equity?

**BE1.5 (LO 3)** Indicate whether each of the following items is an asset (A), liability (L), or part of owner's equity (OE). *Identify assets, liabilities, and owner's equity.*

_____ **a.** Accounts receivable
_____ **b.** Salaries and wages payable
_____ **c.** Equipment
_____ **d.** Supplies
_____ **e.** Owner's capital
_____ **f.** Notes payable

**BE1.6 (LO 3)** Classify each of the following items as owner's drawings (D), revenue (R), or expense (E). *Classify items affecting owner's equity.*

_____ **a.** Advertising expense
_____ **b.** Service revenue
_____ **c.** Insurance expense
_____ **d.** Salaries and wages expense
_____ **e.** Owner's drawings
_____ **f.** Rent revenue
_____ **g.** Utilities expense

**BE1.7 (LO 4)** Presented below are three business transactions. On a sheet of paper, list the letters (a), (b), and (c) with columns for assets, liabilities, and owner's equity. For each column, indicate whether the transactions increased (+), decreased (–), or had no effect (NE) on assets, liabilities, and owner's equity. *Determine effect of transactions on basic accounting equation.*

**a.** Purchased supplies on account.

**b.** Received cash for performing a service.

**c.** Paid expenses in cash.

**BE1.8 (LO 4)** Follow the same format as in BE1.7. Determine the effect on assets, liabilities, and owner's equity of the following three transactions. *Determine effect of transactions on basic accounting equation.*

**a.** Invested cash in the business.

**b.** Withdrawal of cash by owner.

**c.** Received cash from a customer who had previously been billed for services performed.

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*Determine effect of transactions on basic owner's equity.*

**BE1.9 (LO 4)** Presented below are three transactions. Mark each transaction as affecting owner's investment (I), owner's drawings (D), revenue (R), expense (E), or not affecting owner's equity (NOE).

_____ **a.** Received cash for services performed

_____ **b.** Paid cash to purchase equipment

_____ **c.** Paid employee salaries

*Prepare a balance sheet.*

**BE1.10 (LO 5)** **Financial Statement** In alphabetical order below are balance sheet items for Smyth Company at December 31, 2020. Kathy Smyth is the owner of Smyth Company. Prepare a balance sheet, following the format of Illustration 1.9.

| | |
|---|---|
| Accounts payable | $90,000 |
| Accounts receivable | 62,500 |
| Cash | 49,000 |
| Owner's capital | 21,500 |

*Determine where items appear on financial statements.*

**BE1.11 (LO 5)** **Financial Statement** Indicate whether the following items would appear on the income statement (IS), balance sheet (BS), or owner's equity statement (OE).

_____ **a.** Notes payable

_____ **b.** Advertising expense

_____ **c.** Owner's capital

_____ **d.** Cash

_____ **e.** Service revenue

## DO IT! Exercises

*Review basic concepts.*

**DO IT! 1.1 (LO 1)** Indicate whether each of the five statements presented below is true or false.

1. The three steps in the accounting process are identification, recording, and examination.
2. The accounting process includes the bookkeeping function.
3. Managerial accounting provides reports to help investors and creditors evaluate a company.
4. The two most common types of external users are investors and creditors.
5. Internal users include human resources managers.

*Identify building blocks of accounting.*

**DO IT! 1.2 (LO 2)** Indicate whether each of the five statements presented below is true or false.

1. Congress passed the Sarbanes-Oxley Act to ensure that investors invest only in companies that will be profitable.
2. The standards of conduct by which actions are judged as loyal or disloyal are ethics.
3. The primary accounting standard-setting body in the United States is the Securities and Exchange Commission (SEC).
4. The historical cost principle dictates that companies record assets at their cost and continue to report them at their cost over the time the assets are held.
5. The monetary unit assumption requires that companies record only transactions that can be measured in money.

*Evaluate effects of transactions on owner's equity.*

**DO IT! 1.3 (LO 3)** Classify the following items as investment by owner (I), owner's drawings (D), revenues (R), or expenses (E). Then indicate whether each item increases or decreases owner's equity.

1. Drawings.
2. Rent revenue.
3. Advertising expense.
4. Owner puts personal assets into the business.

*Prepare tabular analysis.*

**DO IT! 1.4 (LO 4)** Transactions made by A. Marti and Co., a law firm, for the month of March are shown below. Prepare a tabular analysis which shows the effects of these transactions on the expanded accounting equation, similar to that shown in Illustration 1.8.

1. The company performed $20,000 of services for customers, on credit.
2. The company received $20,000 in cash from customers who had been billed for services (in transaction 1).
3. The company received a bill for $3,200 of advertising but will not pay it until a later date.
4. A. Marti withdrew $2,500 cash from the business for personal use.

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**DO IT! 1.5 (LO 5)** Presented below is selected information related to Kirby Company at December 31, 2020. Kirby reports financial information monthly.

*Determine specific amounts on the financial statements.*

| | | | |
|---|---|---|---|
| Accounts Payable | $ 3,000 | Salaries and Wages Expense | $16,500 |
| Cash | 6,500 | Notes Payable | 25,000 |
| Advertising Expense | 6,000 | Rent Expense | 10,500 |
| Service Revenue | 53,500 | Accounts Receivable | 13,500 |
| Equipment | 29,000 | Owner's Drawings | 7,500 |

**a.** Determine the total assets of Kirby Company at December 31, 2020.

**b.** Determine the net income that Kirby Company reported for December 2020.

**c.** Determine the owner's equity of Kirby Company at December 31, 2020.

## Exercises

**E1.1 (LO 1)** Genesis Company performs the following accounting tasks during the year.

*Classify the three activities of accounting.*

_____Analyzing and interpreting information.
_____Classifying economic events.
_____Explaining uses, meaning, and limitations of data.
_____Keeping a systematic chronological diary of events.
_____Measuring events in dollars and cents.
_____Preparing accounting reports.
_____Reporting information in a standard format.
_____Selecting economic activities relevant to the company.
_____Summarizing economic events.

Accounting is "an information system that **identifies**, **records**, and **communicates** the economic events of an organization to interested users."

### Instructions

Categorize the accounting tasks performed by Genesis as relating to either the identification (I), recording (R), or communication (C) aspects of accounting.

**E1.2 (LO 1)** **a.** The following are users of financial statements.

*Identify users of accounting information.*

_____Customers
_____Internal Revenue Service
_____Labor unions
_____Marketing manager
_____Production supervisor
_____Securities and Exchange Commission
_____Store manager
_____Suppliers
_____Vice president of finance

### Instructions

Identify the users as being either **external users** or **internal users**.

**b.** The following questions could be asked by an internal user or an external user.

_____Can we afford to give our employees a pay raise?
_____Did the company earn a satisfactory income?
_____Do we need to borrow in the near future?
_____How does the company's profitability compare to other companies?
_____What does it cost us to manufacture each unit produced?
_____Which product should we emphasize?
_____Will the company be able to pay its short-term debts?

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**Instructions**

Identify each of the questions as being more likely asked by an **internal user** or an **external user**.

*Discuss ethics and the historical cost principle.*

**E1.3 (LO 2)** Angela Duffy, president of Duffy Company, has instructed Jana Barth, the head of the accounting department for Duffy Company, to report the company's land in the company's accounting reports at its fair value of $170,000 instead of its cost of $100,000. Duffy says, "Showing the land at $170,000 will make our company look like a better investment when we try to attract new investors next month."

**Instructions**

Explain the ethical situation involved for Jana Barth, identifying the stakeholders and the alternatives.

*Use accounting concepts.*

**E1.4 (LO 2)** The following situations involve accounting principles and assumptions.

1. Sosa Company owns buildings that are worth substantially more than they originally cost. In an effort to provide more relevant information, Sosa reports the buildings at fair value in its accounting reports.
2. Mays Company includes in its accounting records only transaction data that can be expressed in terms of money.
3. Curt Russell, owner of Curt's Photography, records his personal living costs as expenses of the business.

**Instructions**

For each of the three situations, say if the accounting method used is correct or incorrect. If correct, identify which principle or assumption supports the method used. If incorrect, identify which principle or assumption has been violated.

*Classify accounts as assets, liabilities, and owner's equity.*

**E1.5 (LO 3)** Diehl Cleaners has the following balance sheet items.

| | |
|---|---|
| Accounts payable | Accounts receivable |
| Cash | Notes payable |
| Equipment | Salaries and wages payable |
| Supplies | Owner's capital |

**Instructions**

Classify each item as an asset, liability, or owner's equity.

*Analyze the effect of transactions.*

**E1.6 (LO 4)** Selected transactions for Poway Landscaping Company are listed below.

1. Made cash investment to start business.
2. Paid monthly rent.
3. Purchased equipment on account.
4. Billed customers for services performed.
5. Withdrew cash for owner's personal use.
6. Received cash from customers billed in (4).
7. Incurred advertising expense on account.
8. Purchased additional equipment for cash.
9. Received cash from customers when service was performed.

**Instructions**

List the numbers of the above transactions and describe the effect of each transaction on assets, liabilities, and owner's equity. For example, the first answer is: (1) Increase in assets and increase in owner's equity.

*Analyze the effect of transactions on assets, liabilities, and owner's equity.*

**E1.7 (LO 4)** Falske Computer Timeshare Company entered into the following transactions during May 2020.

1. Purchased computers for $20,000 from Digital Equipment on account.
2. Paid $4,000 cash for May rent on storage space.
3. Received $17,000 cash from customers for contracts billed in April.
4. Performed computer services for Viking Construction Company for $4,000 cash.
5. Paid Tri-State Power Co. $11,000 cash for energy usage in May.

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6. Falske invested an additional $29,000 in the business.
7. Paid Digital Equipment for the computers purchased in (1) above.
8. Incurred advertising expense for May of $1,200 on account.

### Instructions

Indicate with the appropriate letter whether each of the transactions above results in:

**a.** An increase in assets and a decrease in assets.
**b.** An increase in assets and an increase in owner's equity.
**c.** An increase in assets and an increase in liabilities.
**d.** A decrease in assets and a decrease in owner's equity.
**e.** A decrease in assets and a decrease in liabilities.
**f.** An increase in liabilities and a decrease in owner's equity.
**g.** An increase in owner's equity and a decrease in liabilities.

**E1.8 (LO 4)** **Writing** An analysis of the transactions made by Peat Deloitte & Co., a certified public accounting firm, for the month of August is shown below. The expenses were $560 for rent, $4,800 for salaries and wages, and $400 for utilities.

*Analyze transactions and compute net income.*

| | Cash | + | Accounts Receivable | + | Supplies | + | Equipment | = | Accounts Payable | + | Owner's Capital | – | Owner's Drawings | + | Revenues | – | Expenses |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | +$15,000 | | | | | | | | | | +$15,000 | | | | | | |
| 2. | –2,000 | | | | | | +$5,000 | | +$3,000 | | | | | | | | |
| 3. | –750 | | | | +$750 | | | | | | | | | | | | |
| 4. | +4,000 | | +$4,500 | | | | | | | | | | | | +$8,500 | | |
| 5. | –1,500 | | | | | | | | –1,500 | | | | | | | | |
| 6. | –2,000 | | | | | | | | | | | | –$2,000 | | | | |
| 7. | –560 | | | | | | | | | | | | | | | | –$560 |
| 8. | +450 | | –450 | | | | | | | | | | | | | | |
| 9. | –4,800 | | | | | | | | | | | | | | | | –4,800 |
| 10. | | | | | | | | | +400 | | | | | | | | –400 |

### Instructions

**a.** Describe each transaction that occurred for the month.
**b.** Determine how much owner's equity increased for the month.
**c.** Compute the amount of net income for the month.

**E1.9 (LO 5)** **Financial Statement** An analysis of transactions for Peat DeLoitte & Co. was presented in E1.8.

*Prepare financial statements.*

### Instructions

Prepare an income statement and an owner's equity statement for August and a balance sheet at August 31, 2020. Assume that August is the company's first month of business.

**E1.10 (LO 5)** Hawke Company had the following assets and liabilities on the dates indicated.

*Determine net income (or loss).*

| December 31 | Total Assets | Total Liabilities |
|---|---|---|
| 2019 | $400,000 | $250,000 |
| 2020 | $460,000 | $300,000 |
| 2021 | $590,000 | $400,000 |

Hawke began business on January 1, 2019, with an investment of $100,000.

### Instructions

From an analysis of the change in owner's equity during the year, compute the net income (or loss) for:

**a.** 2019, assuming Hawke's drawings were $12,000 for the year.
**b.** 2020, assuming Hawke made an additional investment of $34,000 and had no drawings in 2020.
**c.** 2021, assuming Hawke made an additional investment of $12,000 and had drawings of $25,000 in 2021.

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*Analyze financial statements items.*

**E1.11 (LO 5)** Two items are omitted from each of the following summaries of balance sheet and income statement data for two proprietorships for the year 2020, Greene's Goods and Solar Enterprises.

| | Greene's Goods | Solar Enterprises |
|---|---|---|
| Beginning of year: | | |
| Total assets | $110,000 | $129,000 |
| Total liabilities | 85,000 | (c) |
| Total owner's equity | (a) | 80,000 |
| End of year: | | |
| Total assets | 160,000 | 180,000 |
| Total liabilities | 120,000 | 50,000 |
| Total owner's equity | 40,000 | 130,000 |
| Changes during year in owner's equity: | | |
| Additional investment | (b) | 25,000 |
| Drawings | 37,000 | (d) |
| Total revenues | 220,000 | 100,000 |
| Total expenses | 175,000 | 60,000 |

**Instructions**

Determine the missing amounts.

*Prepare income statement and owner's equity statement.*

**E1.12 (LO 5)** **Financial Statement** The following information relates to Fleete Co. for the year 2020.

| | | | |
|---|---|---|---|
| Owner's capital, January 1, 2020 | $42,000 | Advertising expense | $ 1,800 |
| Owner's drawings during 2020 | 6,000 | Rent expense | 10,400 |
| Service revenue | 63,600 | Utilities expense | 3,100 |
| Salaries and wages expense | 30,200 | | |

**Instructions**

After analyzing the data, prepare an income statement and an owner's equity statement for the year ending December 31, 2020.

*Correct an incorrectly prepared balance sheet.*

**E1.13 (LO 5)** **Financial Statement** Abby Roland is the bookkeeper for Cheng Company. Abby has been trying to determine the correct balance sheet for Cheng Company. Cheng's balance sheet is shown below.

**Cheng Company**
**Balance Sheet**
**December 31, 2020**

| Assets | | Liabilities | |
|---|---|---|---|
| Cash | $15,000 | Accounts payable | $21,000 |
| Supplies | 8,000 | Accounts receivable | (6,500) |
| Equipment | 46,000 | Owner's capital | 67,500 |
| Owner's drawings | 13,000 | Total liabilities and owner's equity | $82,000 |
| Total assets | $82,000 | | |

**Instructions**

Prepare a correct balance sheet.

*Compute net income and prepare a balance sheet.*

**E1.14 (LO 5)** **Financial Statement** Saira Morrow is the sole owner of Buena Vista Park, a public camping ground near the Crater Lake National Recreation Area. Saira has compiled the following financial information as of December 31, 2020.

| | | | |
|---|---|---|---|
| Revenues during 2020—camping fees | $140,000 | Fair value of equipment | $140,000 |
| Revenues during 2020—general store | 65,000 | Notes payable | 60,000 |
| Accounts payable | 11,000 | Expenses during 2020 | 160,000 |
| Cash on hand | 23,000 | Accounts receivable | 17,500 |
| Original cost of equipment | 115,500 | | |

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**Instructions**

**a.** Determine Saira Morrow's net income from Buena Vista Park for 2020.

**b.** Prepare a balance sheet for Buena Vista Park as of December 31, 2020.

**E1.15 (LO 5) Financial Statement** Presented below is financial information related to the 2020 operations of Sea Legs Cruise Company. *Prepare an income statement.*

| | |
|---|---|
| Maintenance and repairs expense | $ 95,000 |
| Utilities expense | 13,000 |
| Salaries and wages expense | 142,000 |
| Advertising expense | 24,500 |
| Ticket revenue | 410,000 |

**Instructions**

Prepare the 2020 income statement for Sea Legs Cruise Company.

**E1.16 (LO 5) Financial Statement** Presented below is information related to the sole proprietorship of Helen Archer, attorney. *Prepare an owner's equity statement.*

| | |
|---|---|
| Legal service revenue—2020 | $330,000 |
| Total expenses—2020 | 211,000 |
| Assets, January 1, 2020 | 98,000 |
| Liabilities, January 1, 2020 | 62,000 |
| Assets, December 31, 2020 | 168,000 |
| Liabilities, December 31, 2020 | 100,000 |
| Drawings—2020 | ? |

**Instructions**

Prepare the 2020 owner's equity statement for Helen Archer's legal practice.

**E1.17 (LO 5) Financial Statement** This information is for Paulo Company for the year ended December 31, 2020. *Prepare a cash flow statement.*

| | |
|---|---|
| Cash received from revenues from customers | $600,000 |
| Cash received from investment by owner | 280,000 |
| Cash paid for new equipment | 115,000 |
| Cash drawings by owner paid | 18,000 |
| Cash paid for expenses | 430,000 |
| Cash balance 1/1/20 | 30,000 |

**Instructions**

Prepare the 2020 statement of cash flows for Paulo Company.

**E1.18 (LO 5)** The statement of cash flows classifies each transaction as an operating activity, an investing activity, or a financing activity. Operating activities are the types of activities the company performs to generate profits. Investing activities include the purchase of long-lived assets such as equipment or the purchase of investment securities. Financing activities are borrowing money, investment by owner, and cash drawings by owner. *Identify cash flow activities.*

Presented below are the following transactions.

1. Owner invested $20,000 cash.
2. Issued note payable for $12,000 cash.
3. Purchased office equipment for $11,000 cash.
4. Received $15,000 cash for services performed.
5. Paid $1,000 cash for rent.
6. Paid $600 cash drawings to owner.
7. Paid $5,700 cash for salaries.

**Instructions**

Classify each of these transactions as operating, investing, or financing activities.

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## Problems: Set A

*Analyze transactions and compute net income.*

Excel

**P1.1A (LO 3, 4)** On April 1, Julie Spengel established Spengel's Travel Agency. The following transactions were completed during the month.

1. Invested $15,000 cash to start the agency.
2. Paid $600 cash for April office rent.
3. Purchased equipment for $3,000 cash.
4. Incurred $700 of advertising costs in the *Chicago Tribune,* on account.
5. Paid $900 cash for office supplies.
6. Performed services worth $10,000: $3,000 cash is received from customers, and the balance of $7,000 is billed to customers on account.
7. Withdrew $600 cash for personal use.
8. Paid *Chicago Tribune* $500 of the amount due in transaction (4).
9. Paid employees' salaries $2,500.
10. Received $4,000 in cash from customers who have previously been billed in transaction (6).

***Check figures*** *provide a key number to let you know you are on the right track.*

a. Total assets $20,800

b. Net income $6,200

**Instructions**

**a.** Prepare a tabular analysis of the transactions using the following column headings: Cash, Accounts Receivable, Supplies, Equipment, Accounts Payable, Owner's Capital, Owner's Drawings, Revenues, and Expenses.

**b.** From an analysis of the owner's equity columns, compute the net income or net loss for April.

*Analyze transactions and prepare income statement, owner's equity statement, and balance sheet.*

Excel

**P1.2A (LO 4, 5)** **Financial Statement** Sonya Jared opened a law office on July 1, 2020. On July 31, the balance sheet showed Cash $5,000, Accounts Receivable $1,500, Supplies $500, Equipment $6,000, Accounts Payable $4,200, and Owner's Capital $8,800. During August, the following transactions occurred.

1. Collected $1,200 of accounts receivable.
2. Paid $2,800 cash on accounts payable.
3. Recognized revenue of $7,500 of which $4,000 is collected in cash and the balance is due in September.
4. Purchased additional equipment for $2,000, paying $400 in cash and the balance on account.
5. Paid salaries $2,800, rent for August $900, and advertising expenses $400.
6. Withdrew $700 in cash for personal use.
7. Received $2,000 from Standard Federal Bank—money borrowed on a note payable.
8. Incurred utility expenses for month on account $270.

**Instructions**

a. Total assets $16,500

**a.** Prepare a tabular analysis of the August transactions beginning with July 31 balances. The column headings should be as follows: Cash + Accounts Receivable + Supplies + Equipment = Notes Payable + Accounts Payable + Owner's Capital – Owner's Drawings + Revenues – Expenses.

b. Net income $3,130
Ending capital $11,230

**b.** Prepare an income statement for August, an owner's equity statement for August, and a balance sheet at August 31.

*Prepare income statement, owner's equity statement, and balance sheet.*

**P1.3A (LO 5)** **Financial Statement** On June 1, Cindy Godfrey started Divine Designs Co., a company that provides craft opportunities, by investing $12,000 cash in the business. Following are the assets and liabilities of the company at June 30 and the revenues and expenses for the month of June.

| | | | |
|---|---|---|---|
| Cash | $10,150 | Service Revenue | $6,500 |
| Accounts Receivable | 2,800 | Advertising Expense | 500 |
| Supplies | 2,000 | Rent Expense | 1,600 |
| Equipment | 10,000 | Gasoline Expense | 200 |
| Notes Payable | 9,000 | Utilities Expense | 150 |
| Accounts Payable | 1,200 | | |

Cindy made no additional investment in June but withdrew $1,300 in cash for personal use during the month.

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### Instructions

**a.** Prepare an income statement and owner's equity statement for the month of June and a balance sheet at June 30, 2020.

**b.** Prepare an income statement and owner's equity statement for June assuming the following data are not included above: (1) $900 of services were performed and billed but not collected at June 30, and (2) $150 of gasoline expense was incurred but not paid.

a. Net income $4,050
Owner's equity $14,750
Total assets $24,950
b. Owner's equity $15,500

**P1.4A (LO 4, 5)** **Financial Statement** Maisie Taft started her own consulting firm, Maisie Consulting, on May 1, 2020. The following transactions occurred during the month of May.

*Analyze transactions and prepare financial statements.*

May 1 Maisie invested $7,000 cash in the business.
2 Paid $900 for office rent for the month.
3 Purchased $800 of supplies on account.
5 Paid $125 to advertise in the *County News*.
9 Received $4,000 cash for services performed.
12 Withdrew $1,000 cash for personal use.
15 Performed $6,400 of services on account.
17 Paid $2,500 for employee salaries.
20 Made a partial payment of $600 for the supplies purchased on account on May 3.
23 Received a cash payment of $4,000 for services performed on account on May 15.
26 Borrowed $5,000 from the bank on a note payable.
29 Purchased equipment for $4,200 on account.
30 Paid $275 for utilities.

### Instructions

**a.** Show the effects of the previous transactions on the accounting equation using the following format.

a. Total assets $22,000

| | Assets | | | | | Liabilities | | Owner's Equity | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Accounts | | | | Notes | Accounts | Owner's | Owner's | | |
| Date | Cash | + Receivable | + Supplies | + Equipment | = | Payable | + Payable | + Capital | – Drawings | + Revenues | – Expenses |

**b.** Prepare an income statement for the month of May.

b. Net income $6,600

**c.** Prepare a balance sheet at May 31, 2020.

c. Cash $14,600

**P1.5A (LO 4, 5)** **Writing** **Financial Statement** Financial statement information about four different companies is as follows.

*Determine financial statement amounts and prepare owner's equity statement.*

| | Alpha Company | Beta Company | Psi Company | Omega Company |
|---|---|---|---|---|
| January 1, 2020 | | | | |
| Assets | $ 80,000 | $ 90,000 | (g) | $150,000 |
| Liabilities | 41,000 | (d) | 80,000 | (j) |
| Owner's equity | (a) | 40,000 | 49,000 | 90,000 |
| December 31, 2020 | | | | |
| Assets | (b) | 112,000 | 170,000 | (k) |
| Liabilities | 60,000 | 72,000 | (h) | 100,000 |
| Owner's equity | 50,000 | (e) | 82,000 | 151,000 |
| Owner's equity changes in year | | | | |
| Additional investment | (c) | 8,000 | 10,000 | 15,000 |
| Drawings | 15,000 | (f) | 12,000 | 10,000 |
| Total revenues | 350,000 | 410,000 | (i) | 500,000 |
| Total expenses | 333,000 | 385,000 | 350,000 | (l) |

### Instructions

**a.** Determine the missing amounts. (*Hint:* For example, to solve for (a), Assets – Liabilities = Owner's equity = $39,000.)

**b.** Prepare the owner's equity statement for Alpha Company.

**c.** Write a memorandum explaining the sequence for preparing financial statements and the interrelationship of the owner's equity statement to the income statement and balance sheet.

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## Continuing Case

*The **Cookie Creations** case starts in this chapter and continues through Chapter 18. The business begins as a sole proprietorship and then evolves into a partnership and finally a corporation. You also can find this case in WileyPLUS.*

### Cookie Creations

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**CC1** Natalie Koebel spent much of her childhood learning the art of cookie-making from her grandmother. They passed many happy hours mastering every type of cookie imaginable and later creating new recipes that were both healthy and delicious. Now at the start of her second year in college, Natalie is investigating various possibilities for starting her own business as part of the requirements of the entrepreneurship program in which she is enrolled.

A long-time friend insists that Natalie has to include cookies in her business plan. After a series of brainstorming sessions, Natalie settles on the idea of operating a cookie-making school. She will start on a part-time basis and offer her services in people's homes. Now that she has started thinking about it, the possibilities seem endless. During the fall, she will concentrate on holiday cookies. She will offer individual lessons and group sessions (which will probably be more entertainment than education for the participants). Natalie also decides to include children in her target market.

The first difficult decision is coming up with the perfect name for her business. Natalie settles on "Cookie Creations" and then moves on to more important issues.

#### Instructions

**a.** What form of business organization—proprietorship, partnership, or corporation—do you recommend that Natalie use for her business? Discuss the benefits and weaknesses of each form and give the reasons for your choice.

**b.** Will Natalie need accounting information? If yes, what information will she need and why? How often will she need this information?

**c.** Identify specific asset, liability, and owner's equity accounts that Cookie Creations will likely use to record its business transactions.

**d.** Should Natalie open a separate bank account for the business? Why or why not?

## Ethics Case

**EC1** After numerous campus interviews, Travis Chase, a senior at Great Northern College, received two office interview invitations from the Baltimore offices of two large firms. Both firms offered to cover his out-of-pocket expenses (travel, hotel, and meals). He scheduled the interviews for both firms on the same day, one in the morning and one in the afternoon. At the conclusion of each interview, he submitted to both firms his total out-of-pocket expenses for the trip to Baltimore: mileage $112 (280 miles at $0.40), hotel $130, meals $36, and parking and tolls $18, for a total of $296. He believes this approach is appropriate. If he had made two trips, his cost would have been two times $296. He is also certain that neither firm knew he had visited the other on that same trip. Within 10 days, Travis received two checks in the mail, each in the amount of $296.

#### Instructions

**a.** Who are the stakeholders (affected parties) in this situation?

**b.** What are the ethical issues in this case?

**c.** What would you do in this situation?

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT1.1** The financial statements of **Apple Inc.** for 2015 are presented in Appendix A. The complete annual report, including the notes to the financial statements, is available at the company's website.

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### Instructions

Refer to Apple's financial statements and answer the following questions.

**a.** What were Apple's total assets at September 26, 2015? At September 27, 2014?

**b.** How much cash (and cash equivalents) did Apple have on September 26, 2015?

**c.** What amount of accounts payable did Apple report on September 26, 2015? On September 27, 2014?

**d.** What were Apple's net sales in 2013? In 2014? In 2015?

**e.** What is the amount of the change in Apple's net income from 2014 to 2015?

## Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT1.2** **PepsiCo, Inc.**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

### Instructions

**a.** Based on the information contained in these financial statements, determine the following for each company.

**1.** Total assets at December 26, 2015, for PepsiCo and for Coca-Cola at December 31, 2015.

**2.** Accounts (notes) receivable, net at December 26, 2015, for PepsiCo and at December 31, 2015, for Coca-Cola.

**3.** Net revenues for year ended in 2015.

**4.** Net income for year ended in 2015.

**b.** What conclusions concerning the two companies can be drawn from these data?

## Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT1.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

### Instructions

**a.** Based on the information contained in these financial statements, determine the following for each company.

**1.** Total assets at December 31, 2015, for Amazon and for Wal-Mart at January 31, 2016.

**2.** Receivables (net) at December 31, 2015, for Amazon and for Wal-Mart at January 31, 2016.

**3.** Net sales (product only) for year ended in 2015 (2016 for Wal-Mart).

**4.** Net income for the year ended in 2015 (2016 for Wal-Mart).

**b.** What conclusions concerning these two companies can be drawn from these data?

## Real-World Focus

**CT1.4** This exercise will familiarize you with the skills needed (other than accounting skills) to be a successful accountant.

### Instructions

Search the Internet for "start here go places" to access free accounting resources for future CPAs and then answer the following questions.

**a.** What are the four skill sets that are useful for success in accounting?

**b.** Why are these skill sets useful for a successful accounting career?

## Decision-Making Across the Organization

**CT1.5** Anya and Nick Ramon, local golf stars, opened the Chip-Shot Driving Range on March 1, 2020, by investing $25,000 of their cash savings in the business. A caddy shack was constructed for cash at a cost of $8,000, and $800 was spent on golf balls and golf clubs. The Ramons leased five acres of land

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at a cost of $1,000 per month and paid the first month's rent. During the first month, advertising costs totaled $750, of which $100 was unpaid at March 31, and $400 was paid to members of the high-school golf team for retrieving golf balls. All revenues from customers were deposited in the company's bank account. On March 15, Anya and Nick withdrew a total of $1,000 in cash for personal living expenses. A $120 utility bill was received on March 31 but was not paid. On March 31, the balance in the company's bank account was $18,900.

Anya and Nick thought they had a pretty good first month of operations. But, their estimates of profitability ranged from a loss of $6,100 to net income of $2,480.

### Instructions

With the class divided into groups, answer the following.

**a.** How could the Ramons have concluded that the business operated at a loss of $6,100? Was this a valid basis on which to determine net income?

**b.** How could the Ramons have concluded that the business operated at a net income of $2,480? (*Hint:* Prepare a balance sheet at March 31.) Was this a valid basis on which to determine net income?

**c.** Without preparing an income statement, determine the actual net income for March.

**d.** What was the revenue recognized in March?

## Communication Activity

**CT1.6** Amy Sawyer, the bookkeeper for New Hampshire Company, has been trying to determine the correct balance sheet for the company. The company's balance sheet is shown below.

**New Hampshire Company**
**Balance Sheet**
**For the Month Ended December 31, 2020**

| Assets | | Liabilities | |
|---|---|---|---|
| Equipment | $25,500 | Owner's capital | $26,000 |
| Cash | 9,000 | Accounts receivable | (5,000) |
| Supplies | 3,000 | Owner's drawings | (2,000) |
| Accounts payable | (8,000) | Notes payable | 10,500 |
| | $29,500 | | $29,500 |

### Instructions

Explain to Amy Sawyer in a memo why the original balance sheet is incorrect, and what should be done to correct it.

## All About You

**CT1.7** Some people are tempted to make their finances look worse to get financial aid. Companies sometimes also manage their financial numbers in order to accomplish certain goals. Earnings management is the planned timing of revenues, expenses, gains, and losses to smooth out bumps in net income. In managing earnings, companies' actions vary from being within the range of ethical activity to being both unethical and illegal attempts to mislead investors and creditors.

### Instructions

Provide responses for each of the following questions.

**a.** Discuss whether you think each of the following actions (adapted from the FAFSA website) to increase the chances of receiving financial aid is ethical.

**1.** Spend the student's assets and income first, before spending parents' assets and income.

**2.** Accelerate necessary expenses to reduce available cash. For example, if you need a new car, buy it before applying for financial aid.

**3.** State that a truly financially dependent child is independent.

**4.** Have a parent take an unpaid leave of absence for long enough to get below the "threshold" level of income.

**b.** What are some reasons why a **company** might want to overstate its earnings?

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**c.** What are some reasons why a **company** might want to understate its earnings?

**d.** Under what circumstances might an otherwise ethical person decide to illegally overstate or understate earnings?

### Considering People, Planet, and Profit

**CT1.8** Although **Clif Bar & Company** is not a public company, it does share its financial information with its employees as part of its open-book management approach. Further, although it does not publicly share its financial information, it does provide a different form of an annual report to external users. In this report, the company provides information regarding its sustainability efforts.

#### Instructions

Go to the Who We Are page at the Clif Bar website and identify the five aspirations.

### FASB Codification Activity

**CT1.9** The FASB has developed the Financial Accounting Standards Board Accounting Standards Codification (or more simply "the Codification"). The FASB's primary goal in developing the Codification is to provide in one place all the authoritative literature related to a particular topic. To provide easy access to the Codification, the FASB also developed the Financial Accounting Standards Board Codification Research System (CRS). CRS is an online, real-time database that provides easy access to the Codification. The Codification and the related CRS provide a topically organized structure, subdivided into topic, subtopics, sections, and paragraphs, using a numerical index system.

You may find this system useful in your present and future studies, and so we have provided an opportunity to use this online system as part of the *Expand Your Critical Thinking* section.

#### Instructions

Academic access to the FASB Codification is available through university subscriptions, obtained from the American Accounting Association, for an annual fee of $150. This subscription covers an unlimited number of students within a single institution. Once this access has been obtained by your school, you should log in and familiarize yourself with the resources that are accessible at the FASB Codification site.

## A Look at IFRS

**LEARNING OBJECTIVE 7**

Describe the impact of international accounting standards on U.S. financial reporting.

Most agree that there is a need for one set of international accounting standards. Here is why:

**Multinational corporations.** Today's companies view the entire world as their market. For example, **Coca-Cola**, **Intel**, and **McDonald's** generate more than 50% of their sales outside the United States. Many foreign companies, such as **Toyota**, **Nestlé**, and **Sony**, find their largest market to be the United States.

**Mergers and acquisitions.** The mergers between **Fiat/Chrysler** and **Vodafone/Mannesmann** suggest that we will see even more such business combinations of companies from different countries in the future.

**Information technology.** As communication barriers continue to topple through advances in technology, companies and individuals in different countries and markets are becoming more comfortable buying and selling goods and services from one another.

**Financial markets.** Financial markets are of international significance today. Whether it is currency, equity securities (stocks), bonds, or derivatives, there are active markets throughout the world trading these types of instruments.

### Key Points

Following are the key similarities and differences between GAAP and IFRS as related to accounting fundamentals.

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### Similarities

- The basic techniques for recording business transactions are the same for U.S. and international companies.
- Both international and U. S. accounting standards emphasize transparency in financial reporting. Both sets of standards are primarily driven by meeting the needs of investors and creditors.
- The three most common forms of business organizations, proprietorships, partnerships, and corporations, are also found in countries that use international accounting standards.

### Differences

- International standards are referred to as International Financial Reporting Standards (IFRS), developed by the International Accounting Standards Board. Accounting standards in the United States are referred to as generally accepted accounting principles (GAAP) and are developed by the Financial Accounting Standards Board.
- IFRS tends to be simpler in its accounting and disclosure requirements; some people say it is more "principles-based." GAAP is more detailed; some people say it is more "rules-based."
- The internal control standards applicable to Sarbanes-Oxley (SOX) apply only to large public companies listed on U.S. exchanges. There is continuing debate as to whether non-U.S. companies should have to comply with this extra layer of regulation.

### Looking to the Future

Both the IASB and the FASB are hard at work developing standards that will lead to the elimination of major differences in the way certain transactions are accounted for and reported.

## IFRS Practice

### IFRS Self-Test Questions

1. Which of the following is **not** a reason why a single set of high-quality international accounting standards would be beneficial?
   - **a.** Mergers and acquisition activity.
   - **b.** Financial markets.
   - **c.** Multinational corporations.
   - **d.** GAAP is widely considered to be a superior reporting system.
2. The Sarbanes-Oxley Act determines:
   - **a.** international tax regulations.
   - **b.** internal control standards as enforced by the IASB.
   - **c.** internal control standards of U.S. publicly traded companies.
   - **d.** U.S. tax regulations.
3. IFRS is considered to be more:
   - **a.** principles-based and less rules-based than GAAP.
   - **b.** rules-based and less principles-based than GAAP.
   - **c.** detailed than GAAP.
   - **d.** None of the above.

### IFRS Exercises

**IFRS1.1** Who are the two key international players in the development of international accounting standards? Explain their role.

**IFRS1.2** What is the benefit of a single set of high-quality accounting standards?

### International Financial Reporting Problem: Louis Vuitton

**IFRS1.3** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

#### Instructions

Visit Louis Vuitton's corporate website and answer the following questions from the company's 2015 annual report.

- **a.** What accounting firm performed the audit of Louis Vuitton's financial statements?
- **b.** What is the address of the company's corporate headquarters?
- **c.** What is the company's reporting currency?

#### Answers to IFRS Self-Test Questions

**1.** d **2.** c **3.** a

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# The Recording Process

## Chapter Preview

In Chapter 1, we analyzed business transactions in terms of the accounting equation, and we presented the cumulative effects of these transactions in tabular form. Imagine a company like **MF Global** (as in the following Feature Story) using the same tabular format as Softbyte to keep track of its transactions. In a single day, MF Global engaged in thousands of business transactions. To record each transaction this way would be impractical, expensive, and unnecessary. Instead, companies use a set of procedures and records to keep track of transaction data more easily. This chapter introduces and illustrates these basic procedures and records.

## Feature Story

### Accidents Happen

How organized are you financially? Take a short quiz. Answer yes or no to each question:

- Does your wallet contain so many cash machine receipts that you've been declared a walking fire hazard?
- Do you wait until your debit card is denied before checking the status of your funds?
- Was Aaron Rodgers (the quarterback for the **Green Bay Packers**) playing high school football the last time you verified the accuracy of your bank account?

If you think it is hard to keep track of the many transactions that make up your life, imagine how difficult it is for a big corporation to do so. Not only that, but now consider how important it is for a large company to have good accounting records, especially if it has control of your life savings. **MF Global Holdings Ltd** was such a company. As a large investment broker, it held billions of dollars of investments for clients. If

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you had your life savings invested at MF Global, you might be slightly displeased if you heard this from one of its representatives: "You know, I kind of remember an account for someone with a name like yours—now what did we do with that?"

Unfortunately, that is almost exactly what happened to MF Global's clients shortly before it filed for bankruptcy. During the days immediately following the bankruptcy filing, regulators and auditors struggled to piece things together. In the words of one regulator, "Their books are a disaster . . . we're trying to figure out what numbers are real numbers." One company that considered buying an interest in MF Global walked away from the deal because it "couldn't get a sense of what was on the balance sheet." That company said the information that should have been instantly available instead took days to produce.

It now appears that MF Global did not properly segregate customer accounts from company accounts. And, because of its sloppy recordkeeping, customers were not protected when the company had financial troubles. Total customer losses were approximately $1 billion. As you can see, accounting matters!

**Source:** S. Patterson and A. Lucchetti, "Inside the Hunt for MF Global Cash," *Wall Street Journal Online* (November 11, 2011).

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Describe how accounts, debits, and credits are used to record business transactions. | • The account<br>• Debits and credits<br>• Summary of debit/credit rules | **DO IT! 1** Normal Account Balances |
| **LO 2** Indicate how a journal is used in the recording process. | • The recording process<br>• The journal | **DO IT! 2** Recording Business Activities |
| **LO 3** Explain how a ledger and posting help in the recording process. | • The ledger<br>• Posting<br>• Chart of accounts<br>• The recording process illustrated<br>• Summary illustration of journalizing and posting | **DO IT! 3** Posting |
| **LO 4** Prepare a trial balance. | • Limitations of a trial balance<br>• Locating errors<br>• Dollar signs and underlining | **DO IT! 4** Trial Balance |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

# Accounts, Debits, and Credits

**LEARNING OBJECTIVE 1**

Describe how accounts, debits, and credits are used to record business transactions.

## The Account

An **account** is an individual accounting record of increases and decreases in a specific asset, liability, or owner's equity item. For example, Softbyte (the company discussed in Chapter 1) would have separate accounts for Cash, Accounts Receivable, Accounts Payable, Service

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Revenue, Salaries and Wages Expense, and so on. (Note that whenever we are referring to a specific account, we capitalize the name.)

In its simplest form, an account consists of three parts: (1) a title, (2) a left or debit side, and (3) a right or credit side. Because the format of an account resembles the letter T, we refer to it as a **T-account**. **Illustration 2.1** shows the basic form of an account.

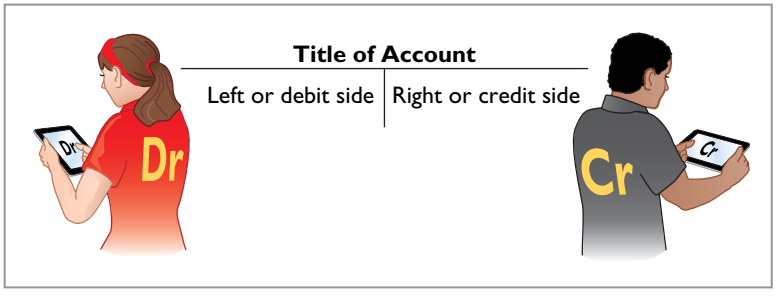


**ILLUSTRATION 2.1**
**Basic form of account**

We use this form often throughout this book to explain basic accounting relationships.

## Debits and Credits

The term **debit** indicates the left side of an account, and **credit** indicates the right side. They are commonly abbreviated as **Dr.** for debit and **Cr.** for credit. They **do not** mean increase or decrease, as is commonly thought. We use the terms **debit** and **credit** repeatedly in the recording process to describe **where** entries are made in accounts. For example, the act of entering an amount on the left side of an account is called **debiting** the account. Making an entry on the right side is **crediting** the account.

When comparing the totals of the two sides, an account shows a **debit balance** if the total of the debit amounts exceeds the credits. An account shows a **credit balance** if the credit amounts exceed the debits. Note the position of the debit side and credit side in Illustration 2.1.

The procedure of recording debits and credits in an account is shown in **Illustration 2.2** for the transactions affecting the Cash account of Softbyte. The data are taken from the Cash column of the tabular summary in Illustration 1.8.

**Tabular Summary**

| Cash |
|---|
| $15,000 |
| –7,000 |
| 1,200 |
| 1,500 |
| –1,700 |
| –250 |
| 600 |
| –1,300 |
| $ 8,050 |

**Account Form**

| Cash | | | |
|---|---|---|---|
| (Debits) | 15,000 | (Credits) | 7,000 |
| | 1,200 | | 1,700 |
| | 1,500 | | 250 |
| | 600 | | 1,300 |
| Balance (Debit) | 8,050 | | |

**ILLUSTRATION 2.2**
**Tabular summary and account form for Softbyte's Cash account**

Every positive item in the tabular summary represents a receipt of cash. Every negative amount represents a payment of cash. **Notice that in the account form, we record the increases in cash as debits and the decreases in cash as credits.** For example, the $15,000 receipt of cash (in blue) is debited to Cash, and the –$7,000 payment of cash (in red) is credited to Cash.

Having increases on one side and decreases on the other reduces recording errors and helps in determining the totals of each side of the account as well as the account balance. The balance is determined by netting the two sides (subtracting one amount from the other). The account balance, a debit of $8,050, indicates that Softbyte had $8,050 more increases than decreases in cash. In other words, Softbyte started with a balance of zero and now has $8,050 in its Cash account.

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## Debit and Credit Procedure

**INTERNATIONAL NOTE**

**Rules for accounting for specific events sometimes differ across countries. Despite the differences, the double-entry accounting system is the basis of accounting systems worldwide.**

In Chapter 1, you learned the effect of a transaction on the basic accounting equation. Remember that each transaction must affect two or more accounts to keep the basic accounting equation in balance. In other words, for each transaction, debits must equal credits. The equality of debits and credits provides the basis for the **double-entry system** of recording transactions (see **International Note**).

Under the double-entry system, the dual (two-sided) effect of each transaction is recorded in appropriate accounts. This system provides a logical method for recording transactions and also helps ensure the accuracy of the recorded amounts as well as the detection of errors. If every transaction is recorded with equal debits and credits, the sum of all the debits to the accounts must equal the sum of all the credits.

The double-entry system for determining the equality of the accounting equation is much more efficient than the plus/minus procedure used in Chapter 1. The following discussion illustrates debit and credit procedures in the double-entry system.

## Dr./Cr. Procedures for Assets and Liabilities

In Illustration 2.2 for Softbyte, increases in Cash—an asset—are entered on the left side, and decreases in Cash are entered on the right side. We know that both sides of the basic equation (Assets = Liabilities + Owner's Equity) must be equal. It therefore follows that increases and decreases in liabilities have to be recorded **opposite from** increases and decreases in assets. Thus, increases in liabilities are entered on the right or credit side, and decreases in liabilities are entered on the left or debit side. The effects that debits and credits have on assets and liabilities are summarized in **Illustration 2.3**.

**ILLUSTRATION 2.3**

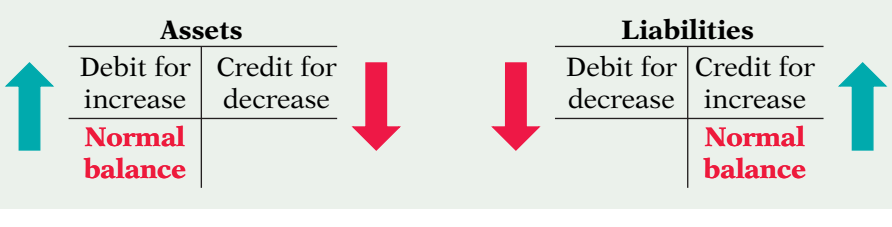
**Debit and credit effects—assets and liabilities**

| Debits | Credits |
|---|---|
| Increase assets | Decrease assets |
| Decrease liabilities | Increase liabilities |

**Asset accounts normally show debit balances.** That is, debits to a specific asset account should exceed credits to that account. Likewise, **liability accounts normally show credit balances**. That is, credits to a liability account should exceed debits to that account. The **normal balance** of an account is on the side where an increase in the account is recorded. **Illustration 2.4** shows the normal balances for assets and liabilities.

**ILLUSTRATION 2.4**

**Normal balances—assets and liabilities**




Knowing the normal balance in an account may help you trace errors. For example, a credit balance in an asset account such as Land or a debit balance in a liability account such as Salaries and Wages Payable usually indicates an error. Occasionally, though, an abnormal balance may be correct. The Cash account, for example, will have a credit balance when a company has overdrawn its bank balance by spending more than it has in its account.

## Dr./Cr. Procedures for Owner's Equity

As Chapter 1 indicated, owner's investments and revenues increase owner's equity. Owner's drawings and expenses decrease owner's equity. Companies keep accounts for each of these types of transactions.

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**Owner's Capital.** Investments by owners are credited to the Owner's Capital account. Credits increase this account, and debits decrease it. When an owner invests cash in the business, the company debits (increases) Cash and credits (increases) Owner's Capital. When the owner's investment in the business is reduced, Owner's Capital is debited (decreased).

Illustration 2.5 shows the rules of debit and credit for the Owner's Capital account.

| Debits | Credits |
|---|---|
| Decrease Owner's Capital | Increase Owner's Capital |

**ILLUSTRATION 2.5**
**Debit and credit effects—Owner's Capital**

We can diagram the normal balance in Owner's Capital as shown in Illustration 2.6.

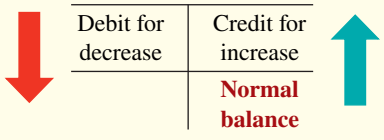


**ILLUSTRATION 2.6**
**Normal balance—Owner's Capital**

**Owner's Drawings.** An owner may withdraw cash or other assets for personal use. Withdrawals could be debited directly to Owner's Capital to indicate a decrease in owner's equity. However, it is preferable to use a separate account, called Owner's Drawings. This separate account makes it easier to determine total withdrawals for each accounting period. Owner's Drawings is increased by debits and decreased by credits. Normally, the drawings account will have a debit balance.

Illustration 2.7 shows the rules of debit and credit for the Owner's Drawings account.

| Debits | Credits |
|---|---|
| Increase Owner's Drawings | Decrease Owner's Drawings |

**ILLUSTRATION 2.7**
**Debit and credit effects—Owner's Drawings**

We can diagram the normal balance as shown in Illustration 2.8.

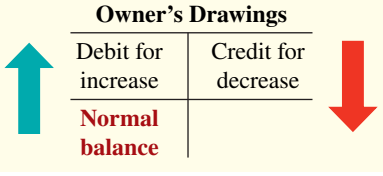


**ILLUSTRATION 2.8**
**Normal balance—Owner's Drawings**

**The Owner's Drawings account decreases owner's equity. It is not an income statement account like revenues and expenses.**

**Revenues and Expenses.** The purpose of earning revenues is to benefit the owner(s) of the business. When a company recognizes revenues, owner's equity increases. Therefore, **the effect of debits and credits on revenue accounts is the same as their effect on Owner's Capital**. That is, revenue accounts are increased by credits and decreased by debits (see Helpful Hint).

Expenses have the opposite effect. Expenses decrease owner's equity. Since expenses decrease net income and revenues increase it, it is logical that the increase and decrease sides of expense accounts should be the opposite of revenue accounts. Thus, expense accounts are increased by debits and decreased by credits. Illustration 2.9 shows the rules of debits and credits for revenues and expenses.

**HELPFUL HINT**
Because revenues increase owner's equity, a revenue account has the same debit/credit rules as the Owner's Capital account. Expenses have the opposite effect.

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**ILLUSTRATION 2.9**
**Debit and credit effects—revenues and expenses**

| Debits | Credits |
|---|---|
| Decrease revenues | Increase revenues |
| Increase expenses | Decrease expenses |

Credits to revenue accounts should exceed debits. Debits to expense accounts should exceed credits. Thus, revenue accounts normally show credit balances, and expense accounts normally show debit balances. **Illustration 2.10** shows the normal balances for revenues and expenses.

**ILLUSTRATION 2.10**
**Normal balances—revenues and expenses**

| Revenues | |
|---|---|
| Debit for decrease | Credit for increase |
| | **Normal balance** |

| Expenses | |
|---|---|
| Debit for increase | Credit for decrease |
| **Normal balance** | |

## Investor Insight Chicago Cubs

Jonathan Daniel/Getty Images, Inc.

### Keeping Score

The **Chicago Cubs** baseball team probably has these major revenue and expense accounts:

| Revenues |
|---|
| Admissions (ticket sales) |
| Concessions |
| Television and radio |
| Advertising |

| Expenses |
|---|
| Players' salaries |
| Administrative salaries |
| Travel |
| Ballpark maintenance |

**Do you think that the Chicago Bears football team would be likely to have the same major revenue and expense accounts as the Cubs? (Go to WileyPLUS for this answer and additional questions.)**

**HELPFUL HINT**
You may want to bookmark Illustration 2.11. You probably will refer to it often.

## Summary of Debit/Credit Rules

**Illustration 2.11** shows a summary of the debit/credit rules and effects on each type of account. Study this diagram carefully. It will help you understand the fundamentals of the double-entry system (see **Helpful Hint**).

**ILLUSTRATION 2.11** **Summary of debit/credit rules**

**Basic Equation**

Assets = Liabilities + Owner's Equity

**Expanded Equation**

| Assets | | = | Liabilities | | + | Owner's Capital | | − | Owner's Drawings | | + | Revenues | | − | Expenses | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dr. + | Cr. − | | Dr. − | Cr. + | | Dr. − | Cr. + | | Dr. + | Cr. − | | Dr. − | Cr. + | | Dr. + | Cr. − |

**Debit / Credit Effects**

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### DO IT! 1 | Normal Account Balances

Kate Browne has just rented space in a shopping mall. In this space, she will open a hair salon to be called "Hair It Is." A friend has advised Kate to set up a double-entry set of accounting records in which to record all of her business transactions.

Identify the balance sheet accounts that Kate will likely need to record the transactions needed to open her business. Indicate whether the normal balance of each account is a debit or a credit.

**ACTION PLAN**

- Determine the types of accounts needed. Kate will need asset accounts for each different type of asset she invests in the business and liability accounts for any debts she incurs.
- Understand the types of owner's equity accounts. Only Owner's Capital will be needed when Kate begins the business. Other owner's equity accounts will be needed later.

**Solution**

Kate would likely need the following accounts in which to record the transactions necessary to ready her hair salon for opening day:

Cash (debit balance)
Equipment (debit balance)
Supplies (debit balance)
Accounts Payable (credit balance)
If she borrows money: Notes Payable (credit balance)
Owner's Capital (credit balance)

Related exercise material: **BE2.1, BE2.2, DO IT! 2.1, E2.1, E2.2, and E2.4.**

# The Journal

**LEARNING OBJECTIVE 2**

Indicate how a journal is used in the recording process.

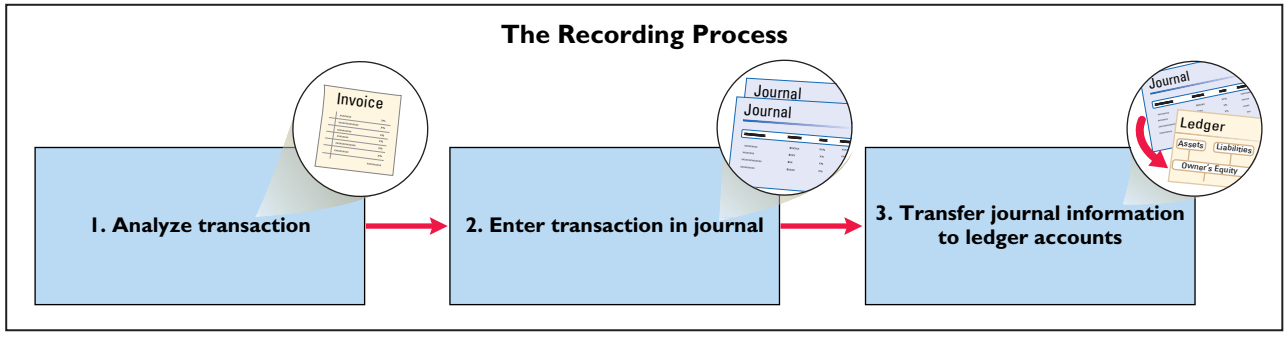
ANALYZE → **Journalize the transactions** → POST → TRIAL BALANCE → ADJUSTING ENTRIES → ADJUSTED TRIAL BALANCE → FINANCIAL STATEMENTS → CLOSING ENTRIES → POST-CLOSING TRIAL BALANCE

## The Recording Process

Although it is possible to enter transaction information directly into the accounts, few businesses do so. Practically every business uses the basic steps shown in **Illustration 2.12** in the recording process (an integral part of the accounting cycle):

1. Analyze each transaction in terms of its effect on the accounts.
2. Enter the transaction information in a journal.
3. Transfer the journal information to the appropriate accounts in the ledger.

**ILLUSTRATION 2.12** The recording process



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The steps in the recording process occur repeatedly. In Chapter 1, we illustrated the first step, the analysis of transactions, and will give further examples in this and later chapters. The other two steps in the recording process are explained in the next sections.

# The Journal

Companies initially record transactions in chronological order (the order in which they occur). Thus, the **journal** is referred to as the book of original entry. For each transaction, the journal shows the debit and credit effects on specific accounts.

Companies may use various kinds of journals, but every company has the most basic form of journal, a **general journal**. Typically, a general journal has spaces for dates, account titles and explanations, references, and two amount columns. See the format of the journal in Illustration 2.13. *Whenever we use the term "journal" in this textbook, we mean the general journal unless we specify otherwise.*

The journal makes several significant contributions to the recording process:

1. It discloses in one place the **complete effects of a transaction**.
2. It provides a **chronological record** of transactions.
3. It helps to **prevent or locate errors** because the debit and credit amounts for each entry can be easily compared.

## Journalizing

Entering transaction data in the journal is known as **journalizing**. Companies make separate journal entries for each transaction. A complete entry consists of (1) the date of the transaction, (2) the accounts and amounts to be debited and credited, and (3) a brief explanation of the transaction.

Illustration 2.13 shows the technique of journalizing, using the first two transactions of Softbyte. Recall that on September 1, Ray Neal invested $15,000 cash in the business, and Softbyte purchased computer equipment for $7,000 cash. The number J1 indicates that these two entries are recorded on the first page of the journal. **Illustration 2.13** shows the standard form of journal entries for these two transactions. (The boxed numbers correspond to explanations in the list below the illustration.)

**ILLUSTRATION 2.13**
**Technique of journalizing**

| GENERAL JOURNAL | | | | J1 |
|---|---|---|---|---|
| **Date** | **Account Titles and Explanation** | **Ref.** | **Debit** | **Credit** |
| 2020 | | 5 | | |
| Sept. 1 | 2 Cash | | 15,000 | |
| 1 | 3 Owner's Capital | | | 15,000 |
| | 4 (Owner's investment of cash in business) | | | |
| 1 | Equipment | | 7,000 | |
| | Cash | | | 7,000 |
| | (Purchase of equipment for cash) | | | |

1 The date of the transaction is entered in the Date column.

2 The debit account title (that is, the account to be debited) is entered first at the extreme left margin of the column headed "Account Titles and Explanation," and the amount of the debit is recorded in the Debit column.

3 The credit account title (that is, the account to be credited) is indented and entered on the next line in the column headed "Account Titles and Explanation," and the amount of the credit is recorded in the Credit column.

4 A brief explanation of the transaction appears on the line below the credit account title. A space is left between journal entries. The blank space separates individual journal entries and makes the entire journal easier to read.

5 The column titled Ref. (which stands for Reference) is left blank when the journal entry is made. This column is used later when the journal entries are transferred to the individual accounts.

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**It is important to use correct and specific account titles in journalizing.** Erroneous account titles lead to incorrect financial statements. However, some flexibility exists initially in selecting account titles. The main criterion is that each title must appropriately describe the content of the account. Once a company chooses the specific title to use, it should record under that account title all later transactions involving the account. *In homework problems, you should use specific account titles when they are given.* When account titles are not given, you may select account titles that identify the nature and content of each account. The account titles used in journalizing should not contain explanations such as Cash Paid or Cash Received.

## Simple and Compound Entries

Some entries involve only two accounts, one debit and one credit. (See, for example, the entries in Illustration 2.13.) This type of entry is called a **simple entry**. Some transactions, however, require more than two accounts in journalizing. An entry that requires three or more accounts is a **compound entry**. To illustrate, assume that on July 1, Butler Company purchases a delivery truck costing $14,000. It pays $8,000 cash now and agrees to pay the remaining $6,000 on account (to be paid later). **Illustration 2.14** shows the compound entry.

**ILLUSTRATION 2.14**
**Compound journal entry**

| GENERAL JOURNAL | | | | J1 |
|---|---|---|---|---|
| **Date** | **Account Titles and Explanation** | **Ref.** | **Debit** | **Credit** |
| 2020 | | | | |
| July 1 | Equipment | | 14,000 | |
| | Cash | | | 8,000 |
| | Accounts Payable | | | 6,000 |
| | (Purchased truck for cash with balance on account) | | | |

In a compound entry, the standard format requires that all debits be listed before the credits.

## Accounting Across the Organization — Hain Celestial Group

Keith Homan/ Shutterstock

### It Starts with the Transaction

Recording financial transactions in a company's records should be straightforward. If a company determines that a transaction involves revenue, it records revenue. If it has an expense, then it records an expense. However, sometimes this is difficult to do. For example, for more than a year, **Hain Celestial Group** (an organic food company) did not provide income information to investors and regulators. The reason was that the company discovered revenue irregularities and said it could not release financial results until it determined when and how to record revenue for certain transactions. When Hain missed four deadlines for reporting earnings information, the food company suffered a 34% drop in its stock price. As one analyst noted, it was hard to fathom why a seemingly simple revenue recognition issue took one year to resolve.

In other situations, outright fraud may occur. For example, regulators charged **Obsidian Energy** for fraudulently moving millions of dollars in expenses from operating expenses to capital expenditure accounts. By understating reported operating expenses, Obsidian made it appear that it was efficiently managing its costs as well as increasing its income.

These examples demonstrate that "getting the basic transaction right" is the foundation for relevant and reliable financial statements. Starting with an incorrect or inappropriate transaction leads to distortions in the financial statements.

**Sources:** Shawn Tully, "The Mystery of Hain Celestial's Accounting," *Fortune.com* (August 20, 2016); and Kelly Cryderman, "U.S. Charges Obsidian, Formerly Penn West, with Accounting Fraud," *The Globe and Mail* (June 28, 2017).

**Why is it important for companies to record financial transactions completely and accurately? (Go to WileyPLUS for this answer and additional questions.)**

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## DO IT! 2 | Recording Business Activities

Kate Browne engaged in the following activities in establishing her salon, Hair It Is:

1. Opened a bank account in the name of Hair It Is and deposited $20,000 of her own money in this account as her initial investment.
2. Purchased equipment on account (to be paid in 30 days) for a total cost of $4,800.
3. Interviewed three people for the position of hair stylist.

Prepare the journal entries to record the transactions.

**ACTION PLAN**

- Understand which activities need to be recorded and which do not. Any that affect assets, liabilities, or owner's equity should be recorded in a journal.
- Analyze the effects of transactions on asset, liability, and owner's equity accounts.

### Solution

The three activities would be recorded as follows.

| | | | |
|---|---|---|---|
| **1.** | Cash | 20,000 | |
| | Owner's Capital | | 20,000 |
| | (Owner's investment of cash in business) | | |
| **2.** | Equipment | 4,800 | |
| | Accounts Payable | | 4,800 |
| | (Purchase of equipment on account) | | |

**3.** No entry because no transaction has occurred.

Related exercise material: **BE2.3, BE2.4, BE2.5, BE2.6, DO IT! 2.2, E2.3, E2.5, E2.6, E2.7, E2.8, and E2.9.**

# The Ledger and Posting

**LEARNING OBJECTIVE 3**

Explain how a ledger and posting help in the recording process.

ANALYZE → JOURNALIZE → **Post to ledger accounts** → TRIAL BALANCE → ADJUSTING ENTRIES → ADJUSTED TRIAL BALANCE → FINANCIAL STATEMENTS → CLOSING ENTRIES → POST-CLOSING TRIAL BALANCE

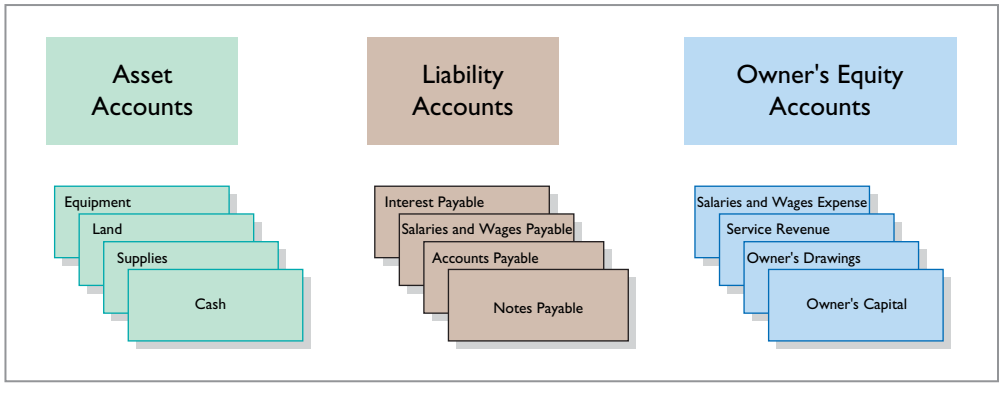
## The Ledger

The entire group of accounts maintained by a company is the **ledger**. The ledger provides the balance in each of the accounts as well as keeps track of changes in these balances.

Companies may use various kinds of ledgers, but every company has a general ledger. A **general ledger** contains all the asset, liability, and owner's equity accounts, as shown in **Illustration 2.15**. *Whenever we use the term "ledger" in this textbook, we are referring to the general ledger unless we specify otherwise.*

**ILLUSTRATION 2.15**

**The general ledger, which contains all of a company's accounts**



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Companies arrange the ledger in the sequence in which they present the accounts in the financial statements, beginning with the balance sheet accounts. First in order are the asset accounts, followed by liability accounts, owner's capital, owner's drawings, revenues, and expenses. Each account is numbered for easier identification.

The ledger provides the balance in each of the accounts. For example, the Cash account shows the amount of cash available to meet current obligations. The Accounts Receivable account shows amounts due from customers. Accounts Payable shows amounts owed to creditors.

## Ethics Insight Credit Suisse Group

© Nuno Silva/iStockphoto

### A Convenient Overstatement

Sometimes a company's investment securities suffer a permanent decline in value below their original cost. When this occurs, the company is supposed to reduce the recorded value of the securities on its balance sheet ("write them down" in common financial lingo) and record a loss. It appears, however, that during the financial crisis of 2008, employees at some financial institutions chose to look the other way as the value of their investments skidded.

A number of Wall Street traders that worked for the investment bank **Credit Suisse Group** were charged with intentionally overstating the value of securities that had suffered declines of approximately $2.85 billion. One reason that they may have been reluctant to record the losses is out of fear that the company's shareholders and clients would panic if they saw the magnitude of the losses. However, personal self-interest might have been equally to blame—the bonuses of the traders were tied to the value of the investment securities.

**Source:** S. Pulliam, J. Eaglesham, and M. Siconolfi, "U.S. Plans Changes on Bond Fraud," *Wall Street Journal Online* (February 1, 2012).

**What incentives might employees have had to overstate the value of these investment securities on the company's financial statements? (Go to WileyPLUS for this answer and additional questions.)**

## Standard Form of Account

The simple T-account form used in accounting textbooks is often very useful for illustration purposes. However, in practice, the account forms used in ledgers are much more structured. **Illustration 2.16** shows a typical form, using assumed data from a cash account.

**CASH** — **NO. 101**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| June 1 | | | 25,000 | | 25,000 |
| 2 | | | | 8,000 | 17,000 |
| 3 | | | 4,200 | | 21,200 |
| 9 | | | 7,500 | | 28,700 |
| 17 | | | | 11,700 | 17,000 |
| 20 | | | | 250 | 16,750 |
| 30 | | | | 7,300 | 9,450 |

**ILLUSTRATION 2.16**
**Three-column form of account**

This format is called the **three-column form of account**. It has three money columns—debit, credit, and balance. The balance in the account is determined after each transaction. Companies use the explanation space and reference columns to provide special information about the transaction.

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## Posting

The procedure of transferring journal entries to the ledger accounts is called **posting**. This phase of the recording process accumulates the effects of journalized transactions into the individual accounts. Posting involves the following steps.

1. In the **ledger**, in the appropriate columns of the account(s) debited, enter the date, journal page, and debit amount shown in the journal.
2. In the reference column of the **journal**, write the account number to which the debit amount was posted.
3. In the **ledger**, in the appropriate columns of the account(s) credited, enter the date, journal page, and credit amount shown in the journal.
4. In the reference column of the **journal**, write the account number to which the credit amount was posted.

**Illustration 2.17** shows these four steps using Softbyte's first journal entry. The boxed numbers indicate the sequence of the steps.

**ILLUSTRATION 2.17**
**Posting a journal entry**

GENERAL JOURNAL — J1

| Date | Account Titles and Explanation | Ref. | Debit | Credit |
|---|---|---|---|---|
| 2020 Sept.1 | Cash | 101 | 15,000 | |
| | Owner's Capital | 301 | | 15,000 |
| | (Owner's investment of cash in business) | | | |

GENERAL LEDGER

Cash — No.101

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 Sept.1 | | J1 | 15,000 | | 15,000 |

Owner's Capital — No.301

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 Sept.1 | | J1 | | 15,000 | 15,000 |

Key: 1 Post to debit account–date, journal page number, and amount.
2 Enter debit account number in journal reference column.
3 Post to credit account–date, journal page number, and amount.
4 Enter credit account number in journal reference column.

Posting should be performed in chronological order. That is, the company should post all the debits and credits of one journal entry before proceeding to the next journal entry. Postings should be made on a timely basis to ensure that the ledger is up-to-date. *In homework problems, you can journalize all transactions before posting any of the journal entries.*

The reference column of a ledger account indicates the journal page from which the transaction was posted. (After the last entry has been posted, the accountant should scan the reference column **in the journal**, to confirm that all postings have been made.) The explanation space of the ledger account is used infrequently because an explanation already appears in the journal.

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## Chart of Accounts

The number and type of accounts differ for each company. The number of accounts depends on the amount of detail management desires. For example, the management of one company may want a single account for all types of utility expense. Another may keep separate expense accounts for each type of utility, such as gas, electricity, and water. Similarly, a small company like Softbyte will have fewer accounts than a corporate giant like **Dell**. Softbyte may be able to manage and report its activities in 20 to 30 accounts, while Dell may require thousands of accounts to keep track of its worldwide activities.

Most companies have a **chart of accounts**. This chart lists the accounts and the account numbers that identify their location in the ledger. The numbering system that identifies the accounts usually starts with the balance sheet accounts and follows with the income statement accounts.

In this and the next two chapters, we explain the accounting for Pioneer Advertising (a service company). Accounts 101–199 indicate asset accounts; 200–299 indicate liabilities; 301–350 indicate owner's equity accounts; 400–499, revenues; 601–799, expenses; 800–899, other revenues; and 900–999, other expenses. **Illustration 2.18** shows Pioneer's chart of accounts. Accounts listed in red are used in this chapter; accounts shown in black are explained in later chapters.

**ILLUSTRATION 2.18**
**Chart of accounts**

**Pioneer Advertising**
**Chart of Accounts**

| Assets | Owner's Equity |
|---|---|
| 101 Cash | 301 Owner's Capital |
| 112 Accounts Receivable | 306 Owner's Drawings |
| 126 Supplies | 350 Income Summary |
| 130 Prepaid Insurance | |
| 157 Equipment | **Revenues** |
| 158 Accumulated Depreciation—Equipment | 400 Service Revenue |
| **Liabilities** | **Expenses** |
| 200 Notes Payable | 631 Supplies Expense |
| 201 Accounts Payable | 711 Depreciation Expense |
| 209 Unearned Service Revenue | 722 Insurance Expense |
| 212 Salaries and Wages Payable | 726 Salaries and Wages Expense |
| 230 Interest Payable | 729 Rent Expense |
| | 732 Utilities Expense |
| | 905 Interest Expense |

You will notice that there are gaps in the numbering system of the chart of accounts for Pioneer. Companies leave gaps to permit the insertion of new accounts as needed during the life of the business.

## The Recording Process Illustrated

**Illustrations 2.19** through **2.28** show the basic steps in the recording process, using the October transactions of Pioneer Advertising (see **Helpful Hint**). Pioneer's accounting period is a month. In these illustrations, a basic analysis, an equation analysis, and a debit-credit analysis precede the journal entry and posting of each transaction. For simplicity, we use the T-account form to show the posting instead of the standard account form.

Study these transaction analyses carefully. **The purpose of transaction analysis is first to identify the type of account involved, and then to determine whether to make a debit**

**HELPFUL HINT**
The Accounting Cycle Tutorial in WileyPLUS provides an interactive presentation of the accounting cycle using these transaction analyses.

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**or a credit to the account.** You should always perform this type of analysis before preparing a journal entry. Doing so will help you understand the journal entries discussed in this chapter as well as more complex journal entries in later chapters (see **Helpful Hint**).

**ILLUSTRATION 2.19**
**Investment of cash by owner**

*Cash flow analyses show the impact of each transaction on cash.*

**Cash Flows**
+10,000

**HELPFUL HINT**

Follow these steps:
1. Determine what type of account is involved.
2. Determine what items increased or decreased and by how much.
3. Translate the increases and decreases into debits and credits.

**Transaction** — On October 1, C. R. Byrd invests $10,000 cash in an advertising company called Pioneer Advertising.

**Basic Analysis** — The asset Cash increases $10,000; owner's equity (specifically, Owner's Capital) increases $10,000.

**Equation Analysis**

| Assets | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|
| | | | | Owner's Capital |
| Cash | = | | | |
| +$10,000 | | | | +$10,000 |

**Debit–Credit Analysis** — Debits increase assets: debit Cash $10,000.
Credits increase owner's equity: credit Owner's Capital $10,000.

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 1 | Cash | 101 | 10,000 | |
| | Owner's Capital | 301 | | 10,000 |
| | (Owner's investment of cash in business) | | | |

**Posting**

| Cash 101 | | Owner's Capital 301 | |
|---|---|---|---|
| Oct. 1 10,000 | | | Oct. 1 10,000 |

**ILLUSTRATION 2.20**
**Purchase of office equipment**

**Cash Flows**
no effect

**Transaction** — On October 1, Pioneer purchases office equipment costing $5,000 by signing a 3-month, 12%, $5,000 note payable.

**Basic Analysis** — The asset Equipment increases $5,000; the liability Notes Payable increases $5,000.

**Equation Analysis**

| Assets | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|
| | | Notes | | |
| Equipment | = | Payable | | |
| +$5,000 | | +$5,000 | | |

**Debit–Credit Analysis** — Debits increase assets: debit Equipment $5,000.
Credits increase liabilities: credit Notes Payable $5,000.

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 1 | Equipment | 157 | 5,000 | |
| | Notes Payable | 200 | | 5,000 |
| | (Issued 3-month, 12% note for office equipment) | | | |

**Posting**

| Equipment 157 | | Notes Payable 200 | |
|---|---|---|---|
| Oct. 1 5,000 | | | Oct. 1 5,000 |

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**ILLUSTRATION 2.21**

**Receipt of cash for future service**

**Many liabilities have the word "payable" in their title. But, note that Unearned Service Revenue is considered a liability even though the word *payable* is not used.**

**Cash Flows**
+1,200

**Transaction**

On October 2, Pioneer receives a $1,200 cash advance from R. Knox, a client, for advertising services that are expected to be completed by December 31.

**Basic Analysis**

The asset Cash increases $1,200; the liability Unearned Service Revenue increases $1,200 because the service has not been performed yet. That is, when Pioneer receives an advance payment, it should record an unearned revenue (a liability) in order to recognize the obligation that exists.

**Equation Analysis**

| Assets | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|
| | | Unearned Service Revenue | | |
| Cash | = | | | |
| +$1,200 | | +$1,200 | | |

**Debit–Credit Analysis**

Debits increase assets: debit Cash $1,200.
Credits increase liabilities: credit Unearned Service Revenue $1,200.

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 2 | Cash | 101 | 1,200 | |
| | Unearned Service Revenue | 209 | | 1,200 |
| | (Received cash from R. Knox for future services) | | | |

**Posting**

| Cash 101 | | | |
|---|---|---|---|
| Oct. 1 | 10,000 | | |
| 2 | 1,200 | | |

| Unearned Service Revenue 209 | | | |
|---|---|---|---|
| | | Oct. 2 | 1,200 |

**ILLUSTRATION 2.22**

**Payment of monthly rent**

**Cash Flows**
−900

**Transaction**

On October 3, Pioneer pays office rent for October in cash, $900.

**Basic Analysis**

The expense account Rent Expense increases $900 because the payment pertains only to the current month; the asset Cash decreases $900.

**Equation Analysis**

| Assets | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|
| | | | | Rent Expense |
| Cash | = | | | |
| -$900 | | | | -$900 |

**Debit–Credit Analysis**

Debits increase expenses: debit Rent Expense $900.
Credits decrease assets: credit Cash $900.

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 3 | Rent Expense | 729 | 900 | |
| | Cash | 101 | | 900 |
| | (Paid cash for October office rent) | | | |

**Posting**

| Cash 101 | | | |
|---|---|---|---|
| Oct. 1 | 10,000 | Oct. 3 | 900 |
| 2 | 1,200 | | |

| Rent Expense 729 | | | |
|---|---|---|---|
| Oct. 3 | 900 | | |

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**ILLUSTRATION 2.23**

**Payment for insurance**

**Cash Flows**
−600

| | |
|---|---|
| **Transaction** | On October 4, Pioneer pays $600 for a one-year insurance policy that will expire next year on September 30. |
| Basic Analysis | The asset Prepaid Insurance increases $600 because the payment extends to more than the current month; the asset Cash decreases $600. Payments of expenses that will benefit more than one accounting period are prepaid expenses or prepayments. When a company makes a payment, it debits an asset account in order to show the service or benefit that will be received in the future. |
| Equation Analysis | **Assets** = **Liabilities** + **Owner's Equity**<br>Cash + Prepaid Insurance<br>-$600 +$600 |
| Debit–Credit Analysis | Debits increase assets: debit Prepaid Insurance $600.<br>Credits decrease assets: credit Cash $600. |

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 4 | Prepaid Insurance | 130 | 600 | |
| | Cash | 101 | | 600 |
| | (Paid one-year policy; effective date October 1) | | | |

**Posting**

| Cash | | 101 | | Prepaid Insurance | | 130 | |
|---|---|---|---|---|---|---|---|
| Oct. 1 | 10,000 | Oct. 3 | 900 | Oct. 4 | 600 | | |
| 2 | 1,200 | 4 | 600 | | | | |

**ILLUSTRATION 2.24**

**Purchase of supplies on credit**

**Cash Flows**
no effect

| | |
|---|---|
| **Transaction** | On October 5, Pioneer purchases an estimated 3-month supply of advertising materials on account from Aero Supply for $2,500. |
| Basic Analysis | The asset Supplies increases $2,500; the liability Accounts Payable increases $2,500. |
| Equation Analysis | **Assets** = **Liabilities** + **Owner's Equity**<br>Supplies = Accounts Payable<br>+$2,500 +$2,500 |
| Debit–Credit Analysis | Debits increase assets: debit Supplies $2,500.<br>Credits increase liabilities: credit Accounts Payable $2,500. |

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 5 | Supplies | 126 | 2,500 | |
| | Accounts Payable | 201 | | 2,500 |
| | (Purchased supplies on account from Aero Supply) | | | |

**Posting**

| Supplies | | 126 | | Accounts Payable | | 201 | |
|---|---|---|---|---|---|---|---|
| Oct. 5 | 2,500 | | | | Oct. 5 | 2,500 | |

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**ILLUSTRATION 2.25**

**Hiring of employees**

| | |
|---|---|
| **Event** | On October 9, Pioneer hires four employees to begin work on October 15. Each employee is to receive a weekly salary of $500 for a 5-day work week, payable every 2 weeks—first payment made on October 26. |
| Basic Analysis | A business transaction has not occurred. There is only an agreement between the employer and the employees to enter into a business transaction beginning on October 15. Thus, a debit–credit analysis is not needed because there is no accounting entry (see October 26 transaction for first entry). |

**Cash Flows**
no effect

**ILLUSTRATION 2.26**

**Withdrawal of cash by owner**

**Transaction** On October 20, C. R. Byrd withdraws $500 cash for personal use.

**Basic Analysis** The owner's equity account Owner's Drawings increases $500; the asset Cash decreases $500.

**Equation Analysis**

| Assets | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|
| | | | | Owner's Drawings |
| Cash | = | | | |
| -$500 | | | | -$500 |

**Debit–Credit Analysis** Debits increase drawings: debit Owner's Drawings $500. Credits decrease assets: credit Cash $500.

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 20 | Owner's Drawings | 306 | 500 | |
| | Cash | 101 | | 500 |
| | (Withdrew cash for personal use) | | | |

**Posting**

Cash 101

| | | | |
|---|---|---|---|
| Oct. 1 | 10,000 | Oct. 3 | 900 |
| 2 | 1,200 | 4 | 600 |
| | | 20 | 500 |

Owner's Drawings 306

| | | | |
|---|---|---|---|
| Oct. 20 | 500 | | |

**Cash Flows**
−500

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**ILLUSTRATION 2.27**

**Payment of salaries**

**Cash Flows**
−4,000

| | |
|---|---|
| **Transaction** | On October 26, Pioneer owes employee salaries of $4,000 and pays them in cash (see October 9 event). |
| Basic Analysis | The expense account Salaries and Wages Expense increases $4,000; the asset Cash decreases $4,000. |
| Equation Analysis | **Assets** = **Liabilities** + **Owner's Equity** (Salaries and Wages Expense)<br>Cash = -$4,000 = -$4,000 |
| Debit–Credit Analysis | Debits increase expenses: debit Salaries and Wages Expense $4,000.<br>Credits decrease assets: credit Cash $4,000. |

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 26 | Salaries and Wages Expense | 726 | 4,000 | |
| | Cash | 101 | | 4,000 |
| | (Paid salaries to date) | | | |

**Posting**

Cash 101

| | | | |
|---|---|---|---|
| Oct. 1 | 10,000 | Oct. 3 | 900 |
| 2 | 1,200 | 4 | 600 |
| | | 20 | 500 |
| | | 26 | 4,000 |

Salaries and Wages Expense 726

| | | | |
|---|---|---|---|
| Oct. 26 | 4,000 | | |

**ILLUSTRATION 2.28**

**Receipt of cash for services performed**

**Cash Flows**
+10,000

| | |
|---|---|
| **Transaction** | On October 31, Pioneer receives $10,000 in cash from Copa Company for advertising services performed in October. |
| Basic Analysis | The asset Cash increases $10,000; the revenue account Service Revenue increases $10,000. |
| Equation Analysis | **Assets** = **Liabilities** + **Owner's Equity** (Service Revenue)<br>Cash = +$10,000 = +$10,000 |
| Debit–Credit Analysis | Debits increase assets: debit Cash $10,000.<br>Credits increase revenues: credit Service Revenue $10,000. |

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 31 | Cash | 101 | 10,000 | |
| | Service Revenue | 400 | | 10,000 |
| | (Received cash for services performed) | | | |

**Posting**

Cash 101

| | | | |
|---|---|---|---|
| Oct. 1 | 10,000 | Oct. 3 | 900 |
| 2 | 1,200 | 4 | 600 |
| 31 | 10,000 | 20 | 500 |
| | | 26 | 4,000 |

Service Revenue 400

| | | | |
|---|---|---|---|
| | | Oct. 31 | 10,000 |

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# Summary Illustration of Journalizing and Posting

**Illustration 2.29** shows the journal for Pioneer Advertising for October.

**ILLUSTRATION 2.29**
**General journal entries**

| GENERAL JOURNAL | | | | PAGE J1 |
|---|---|---|---|---|
| **Date** | **Account Titles and Explanation** | **Ref.** | **Debit** | **Credit** |
| 2020 | | | | |
| Oct. 1 | Cash | 101 | 10,000 | |
| | Owner's Capital | 301 | | 10,000 |
| | (Owner's investment of cash in business) | | | |
| 1 | Equipment | 157 | 5,000 | |
| | Notes Payable | 200 | | 5,000 |
| | (Issued 3-month, 12% note for office equipment) | | | |
| 2 | Cash | 101 | 1,200 | |
| | Unearned Service Revenue | 209 | | 1,200 |
| | (Received cash from R. Knox for future services) | | | |
| 3 | Rent Expense | 729 | 900 | |
| | Cash | 101 | | 900 |
| | (Paid cash for October office rent) | | | |
| 4 | Prepaid Insurance | 130 | 600 | |
| | Cash | 101 | | 600 |
| | (Paid one-year policy; effective date October 1) | | | |
| 5 | Supplies | 126 | 2,500 | |
| | Accounts Payable | 201 | | 2,500 |
| | (Purchased supplies on account from Aero Supply) | | | |
| 20 | Owner's Drawings | 306 | 500 | |
| | Cash | 101 | | 500 |
| | (Withdrew cash for personal use) | | | |
| 26 | Salaries and Wages Expense | 726 | 4,000 | |
| | Cash | 101 | | 4,000 |
| | (Paid salaries to date) | | | |
| 31 | Cash | 101 | 10,000 | |
| | Service Revenue | 400 | | 10,000 |
| | (Received cash for services performed) | | | |

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Illustration 2.30 shows the ledger, with all balances in red.

**ILLUSTRATION 2.30** General ledger

**GENERAL LEDGER**

**Cash** — No. 101

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | 10,000 | | 10,000 |
| 2 | | J1 | 1,200 | | 11,200 |
| 3 | | J1 | | 900 | 10,300 |
| 4 | | J1 | | 600 | 9,700 |
| 20 | | J1 | | 500 | 9,200 |
| 26 | | J1 | | 4,000 | 5,200 |
| 31 | | J1 | 10,000 | | 15,200 |

**Supplies** — No. 126

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 5 | | J1 | 2,500 | | 2,500 |

**Prepaid Insurance** — No. 130

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 4 | | J1 | 600 | | 600 |

**Equipment** — No. 157

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | 5,000 | | 5,000 |

**Notes Payable** — No. 200

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | | 5,000 | 5,000 |

**Accounts Payable** — No. 201

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 5 | | J1 | | 2,500 | 2,500 |

**Unearned Service Revenue** — No. 209

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 2 | | J1 | | 1,200 | 1,200 |

**Owner's Capital** — No. 301

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | | 10,000 | 10,000 |

**Owner's Drawings** — No. 306

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 20 | | J1 | 500 | | 500 |

**Service Revenue** — No. 400

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | | J1 | | 10,000 | 10,000 |

**Salaries and Wages Expense** — No. 726

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 26 | | J1 | 4,000 | | 4,000 |

**Rent Expense** — No. 729

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 3 | | J1 | 900 | | 900 |

## DO IT! 3 | Posting

Kate Browne recorded the following transactions in a general journal during the month of March.

| | | | |
|---|---|---|---|
| Mar. 4 | Cash | 2,280 | |
| | Service Revenue | | 2,280 |
| 15 | Salaries and Wages Expense | 400 | |
| | Cash | | 400 |
| 19 | Utilities Expense | 92 | |
| | Cash | | 92 |

Post these entries to the Cash account of the general ledger to determine its ending balance. The beginning balance of Cash on March 1 was $600.

**ACTION PLAN**

- Recall that posting involves transferring the journalized debits and credits to specific accounts in the ledger.
- Determine the ending balance by netting the total debits and credits.

### Solution

**Cash**

| | | | |
|---|---|---|---|
| 3/1 Bal. | 600 | 3/15 | 400 |
| 3/4 | 2,280 | 3/19 | 92 |
| 3/31 Bal. | 2,388 | | |

Related exercise material: **BE2.7, BE2.8, DO IT! 2.3, E2.11, and E2.14.**

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# The Trial Balance

**LEARNING OBJECTIVE 4**

Prepare a trial balance.

ANALYZE → JOURNALIZE → POST → **Prepare a trial balance** → ADJUSTING ENTRIES → ADJUSTED TRIAL BALANCE → FINANCIAL STATEMENTS → CLOSING ENTRIES → POST-CLOSING TRIAL BALANCE

A **trial balance** is a list of accounts and their balances at a given time. Companies usually prepare a trial balance at the end of an accounting period. They list accounts in the order in which they appear in the ledger. Debit balances appear in the left column and credit balances in the right column. The totals of the two columns must equal.

**The trial balance proves the mathematical equality of debits and credits after posting.** Under the double-entry system, this equality occurs when the sum of the debit account balances equals the sum of the credit account balances. **A trial balance may also uncover errors in journalizing and posting.** For example, a trial balance may well have detected the error at **MF Global** discussed in the Feature Story. **In addition, a trial balance is useful in the preparation of financial statements**, as we will explain in the next two chapters.

The steps for preparing a trial balance are:

1. List the account titles and their balances in the appropriate debit or credit column.
2. Total the debit and credit columns.
3. Verify the equality of the two columns.

**Illustration 2.31** shows the trial balance prepared from Pioneer Advertising's ledger. Note that the total debits equal the total credits.

**Pioneer Advertising**
**Trial Balance**
**October 31, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $15,200 | |
| Supplies | 2,500 | |
| Prepaid Insurance | 600 | |
| Equipment | 5,000 | |
| Notes Payable | | $ 5,000 |
| Accounts Payable | | 2,500 |
| Unearned Service Revenue | | 1,200 |
| Owner's Capital | | 10,000 |
| Owner's Drawings | 500 | |
| Service Revenue | | 10,000 |
| Salaries and Wages Expense | 4,000 | |
| Rent Expense | 900 | |
| | **$28,700** | **$28,700** |

**ILLUSTRATION 2.31**
**A Trial balance**

**Note that the order of presentation in the trial balance is:**

**Assets**
**Liabilities**
**Owner's equity**
**Revenues**
**Expenses**

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A trial balance is a necessary checkpoint for uncovering certain types of errors. For example, if only the debit portion of a journal entry has been posted, the trial balance would bring this error to light.

## Limitations of a Trial Balance

**ETHICS NOTE**

**An error is the result of an unintentional mistake; it is neither ethical nor unethical. An irregularity is an intentional misstatement, which is viewed as unethical.**

A trial balance does not guarantee freedom from recording errors, however (see **Ethics Note**). Numerous errors may exist even though the totals of the trial balance columns agree. For example, the trial balance may balance even when:

1. A transaction is not journalized.
2. A correct journal entry is not posted.
3. A journal entry is posted twice.
4. Incorrect accounts are used in journalizing or posting.
5. Offsetting errors are made in recording the amount of a transaction.

As long as equal debits and credits are posted, even to the wrong account or in the wrong amount, the total debits will equal the total credits. **The trial balance does not prove that the company has recorded all transactions or that the ledger is correct.**

## Locating Errors

Errors in a trial balance generally result from mathematical mistakes, incorrect postings, or simply transcribing data incorrectly. What do you do if you are faced with a trial balance that does not balance? First, determine the amount of the difference between the two columns of the trial balance. After this amount is known, the following steps are often helpful:

1. If the error is $1, $10, $100, or $1,000, re-add the trial balance columns and recompute the account balances.
2. If the error is divisible by 2, scan the trial balance to see whether a balance equal to half the error has been entered in the wrong column.
3. If the error is divisible by 9, retrace the account balances on the trial balance to see whether they are incorrectly copied from the ledger. For example, if a balance was $12 and it was listed as $21, a $9 error has been made. Reversing the order of numbers is called a **transposition error**.
4. If the error is not divisible by 2 or 9, scan the ledger to see whether an account balance in the amount of the error has been omitted from the trial balance, and scan the journal to see whether a posting of that amount has been omitted.

## Dollar Signs and Underlining

Note that dollar signs do not appear in journals or ledgers. Dollar signs are typically used only in the trial balance and the financial statements. Generally, a dollar sign is shown only for the first item in the column and for the total of that column. A single line (a totaling rule) is placed under the column of figures to be added or subtracted. Total amounts are double-underlined to indicate they are final sums.

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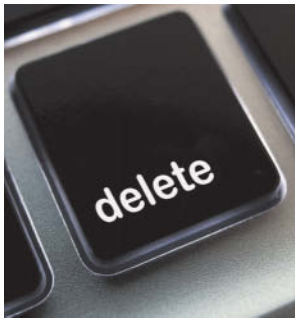
## Investor Insight Fannie Mae



Enviromatic/iStockphoto

### Why Accuracy Matters

While most companies record transactions very carefully, the reality is that mistakes still happen. For example, bank regulators fined **Bank One Corporation** (now **Chase**) $1.8 million because they felt that the unreliability of the bank's accounting system caused it to violate regulatory requirements.

Also, in recent years **Fannie Mae**, the government-chartered mortgage association, announced a series of large accounting errors. These announcements caused alarm among investors, regulators, and politicians because they fear that the errors may suggest larger, undetected problems. This is important because the home-mortgage market depends on Fannie Mae to buy hundreds of billions of dollars of mortgages each year from banks, thus enabling the banks to issue new mortgages.

Finally, before a major overhaul of its accounting system, the financial records of **Waste Management Inc.** were in such disarray that of the company's 57,000 employees, 10,000 were receiving pay slips that were in error.

The Sarbanes-Oxley Act was created to minimize the occurrence of errors like these by increasing every employee's responsibility for accurate financial reporting.

**In order for these companies to prepare and issue financial statements, their accounting equations (debits and credits) must have been in balance at year-end. How could these errors or misstatements have occurred? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 4 | Trial Balance

The following accounts come from the ledger of SnowGo Company at December 31, 2020.

| | | | | | |
|---|---|---|---|---|---|
| 157 | Equipment | $88,000 | 301 | Owner's Capital | $20,000 |
| 306 | Owner's Drawings | 8,000 | 212 | Salaries and Wages Payable | 2,000 |
| 201 | Accounts Payable | 22,000 | 200 | Notes Payable (due in 3 months) | 19,000 |
| 726 | Salaries and Wages Expense | 42,000 | 732 | Utilities Expense | 3,000 |
| 112 | Accounts Receivable | 4,000 | 130 | Prepaid Insurance | 6,000 |
| 400 | Service Revenue | 95,000 | 101 | Cash | 7,000 |

Prepare a trial balance in good form.

**ACTION PLAN**

- **Determine normal balances and list accounts in the order they appear in the ledger.**
- **Accounts with debit balances appear in the left column, and those with credit balances in the right column.**
- **Total the debit and credit columns to prove equality.**

### Solution

**SnowGo Company**
**Trial Balance**
**December 31, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $ 7,000 | |
| Accounts Receivable | 4,000 | |
| Prepaid Insurance | 6,000 | |
| Equipment | 88,000 | |
| Notes Payable | | $ 19,000 |
| Accounts Payable | | 22,000 |
| Salaries and Wages Payable | | 2,000 |
| Owner's Capital | | 20,000 |
| Owner's Drawings | 8,000 | |
| Service Revenue | | 95,000 |
| Utilities Expense | 3,000 | |
| Salaries and Wages Expense | 42,000 | |
| | $158,000 | $158,000 |

Related exercise material: **BE2.9, BE2.10, DO IT! 2.4, E2.11, E2.12, E2.13, E2.15, and E2.16.**

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# Review and Practice

## Learning Objectives Review

**1 Describe how accounts, debits, and credits are used to record business transactions.**

An account is a record of increases and decreases in specific asset, liability, and owner's equity items. The terms debit and credit are synonymous with left and right. Assets, drawings, and expenses are increased by debits and decreased by credits. Liabilities, owner's capital, and revenues are increased by credits and decreased by debits.

**2 Indicate how a journal is used in the recording process.**

The basic steps in the recording process are (a) analyze each transaction for its effects on the accounts, (b) enter the transaction information in a journal, and (c) transfer the journal information to the appropriate accounts in the ledger.

The initial accounting record of a transaction is entered in a journal before the data are entered in the accounts. A journal (a) discloses in one place the complete effects of a transaction, (b) provides a chronological record of transactions, and (c) prevents or locates errors because the debit and credit amounts for each entry can be easily compared.

**3 Explain how a ledger and posting help in the recording process.**

The ledger is the entire group of accounts maintained by a company. The ledger provides the balance in each of the accounts as well as keeps track of changes in these balances. Posting is the transfer of journal entries to the ledger accounts. This phase of the recording process accumulates the effects of journalized transactions in the individual accounts.

**4 Prepare a trial balance.**

A trial balance is a list of accounts and their balances at a given time. Its primary purpose is to prove the equality of debits and credits after posting. A trial balance also uncovers errors in journalizing and posting and is useful in preparing financial statements.

## Glossary Review

**Account** A record of increases and decreases in specific asset, liability, or owner's equity items. (p. 2-2).

**Chart of accounts** A list of accounts and the account numbers that identify their location in the ledger. (p. 2-13).

**Compound entry** A journal entry that involves three or more accounts. (p. 2-9).

**Credit** The right side of an account. (p. 2-3).

**Debit** The left side of an account. (p. 2-3).

**Double-entry system** A system that records in appropriate accounts the dual effect of each transaction. (p. 2-4).

**General journal** The most basic form of journal. (p. 2-8).

**General ledger** A ledger that contains all asset, liability, and owner's equity accounts. (p. 2-10).

**Journal** An accounting record in which transactions are initially recorded in chronological order. (p. 2-8).

**Journalizing** The entering of transaction data in the journal. (p. 2-8).

**Ledger** The entire group of accounts maintained by a company. (p. 2-10).

**Normal balance** An account balance on the side where an increase in the account is recorded. (p. 2-4).

**Posting** The procedure of transferring journal entries to the ledger accounts. (p. 2-12).

**Simple entry** A journal entry that involves only two accounts. (p. 2-9).

**T-account** The basic form of an account, consisting of (1) a title, (2) a left or debit side, and (3) a right or credit side. (p. 2-3).

**Three-column form of account** A form with columns for debit, credit, and balance amounts in an account. (p. 2-11).

**Trial balance** A list of accounts and their balances at a given time. (p. 2-21).

## Practice Multiple-Choice Questions

**1. (LO 1)** Which of the following statements about an account is **true**?

**a.** The right side of an account is the debit, or increase, side.

**b.** An account is an individual accounting record of increases and decreases in specific asset, liability, and owner's equity items.

**c.** There are separate accounts for specific assets and liabilities but only one account for owner's equity items.

**d.** The left side of an account is the credit, or decrease, side.

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2. **(LO 1)** Debits:
   a. increase both assets and liabilities.
   b. decrease both assets and liabilities.
   c. increase assets and decrease liabilities.
   d. decrease assets and increase liabilities.

3. **(LO 1)** A revenue account:
   a. is increased by debits.
   b. is decreased by credits.
   c. has a normal balance of a debit.
   d. is increased by credits.

4. **(LO 1)** Accounts that normally have debit balances are:
   a. assets, expenses, and revenues.
   b. assets, expenses, and owner's capital.
   c. assets, liabilities, and owner's drawings.
   d. assets, owner's drawings, and expenses.

5. **(LO 1)** The expanded accounting equation is:
   a. Assets + Liabilities = Owner's Capital + Owner's Drawings + Revenues + Expenses.
   b. Assets = Liabilities + Owner's Capital + Owner's Drawings + Revenues – Expenses.
   c. Assets = Liabilities – Owner's Capital – Owner's Drawings – Revenues – Expenses.
   d. Assets = Liabilities + Owner's Capital – Owner's Drawings + Revenues – Expenses.

6. **(LO 2)** Which of the following is **not** part of the recording process?
   a. Analyzing transactions.
   b. Preparing an income statement.
   c. Entering transactions in a journal.
   d. Posting journal entries.

7. **(LO 2)** Which of the following statements about a journal is **false**?
   a. It is not a book of original entry.
   b. It provides a chronological record of transactions.
   c. It helps to locate errors because the debit and credit amounts for each entry can be readily compared.
   d. It discloses in one place the complete effect of a transaction.

8. **(LO 2)** The purchase of supplies on account should result in:
   a. a debit to Supplies Expense and a credit to Cash.
   b. a debit to Supplies Expense and a credit to Accounts Payable.
   c. a debit to Supplies and a credit to Accounts Payable.
   d. a debit to Supplies and a credit to Accounts Receivable.

9. **(LO 3)** The order of the accounts in the ledger is:
   a. assets, revenues, expenses, liabilities, owner's capital, owner's drawings.
   b. assets, liabilities, owner's capital, owner's drawings, revenues, expenses.
   c. owner's capital, assets, revenues, expenses, liabilities, owner's drawings.
   d. revenues, assets, expenses, liabilities, owner's capital, owner's drawings.

10. **(LO 3)** A ledger:
   a. contains only asset and liability accounts.
   b. should show accounts in alphabetical order.
   c. is a collection of the entire group of accounts maintained by a company.
   d. is a book of original entry.

11. **(LO 3)** Posting:
   a. normally occurs before journalizing.
   b. transfers ledger transaction data to the journal.
   c. is an optional step in the recording process.
   d. transfers journal entries to ledger accounts.

12. **(LO 3)** Before posting a payment of $5,000, the Accounts Payable of Senator Company had a normal balance of $16,000. The balance after posting this transaction was:
   a. $21,000.
   b. $5,000.
   c. $11,000.
   d. Cannot be determined.

13. **(LO 4)** A trial balance:
   a. is a list of accounts with their balances at a given time.
   b. proves the journalized transactions are correct.
   c. will not balance if a correct journal entry is posted twice.
   d. proves that all transactions have been recorded.

14. **(LO 4)** A trial balance will not balance if:
   a. a correct journal entry is posted twice.
   b. the purchase of supplies on account is debited to Supplies and credited to Cash.
   c. a $100 cash drawing by the owner is debited to Owner's Drawings for $1,000 and credited to Cash for $100.
   d. a $450 payment on account is debited to Accounts Payable for $45 and credited to Cash for $45.

15. **(LO 4)** The trial balance of Jeong Company had accounts with the following normal balances: Cash $5,000, Service Revenue $85,000, Salaries and Wages Payable $4,000, Salaries and Wages Expense $40,000, Rent Expense $10,000, Owner's Capital $42,000, Owner's Drawings $15,000, and Equipment $61,000. In preparing a trial balance, the total in the debit column is:
   a. $131,000.
   b. $216,000.
   c. $91,000.
   d. $116,000.

## Solutions

**1. b.** An account is an individual accounting record of increases and decreases in specific asset, liability, and owner's equity items. The other choices are incorrect because (a) the right side of the account is the credit side, not the debit side, and can be the increase or the decrease side, depending on the specific classification account; (c) there are also separate accounts for different owner's equity items; and (d) the left side of the account is the debit side, not the credit side, and can be either the decrease or the increase side, depending on the specific classification account.

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**2. c.** Debits increase assets but they decrease liabilities. The other choices are incorrect because debits (a) decrease, not increase, liabilities; (b) increase, not decrease, assets; and (d) increase, not decrease, assets and decrease, not increase, liabilities.

**3. d.** A revenue account is increased by credits. The other choices are incorrect because a revenue account (a) is increased by credits, not debits; (b) is decreased by debits, not credits; and (c) has a normal balance of a credit, not a debit.

**4. d.** Assets, owner's drawings, and expenses all have normal debit balances. The other choices are incorrect because (a) revenues have normal credit balances, (b) owner's capital has a normal credit balance, and (c) liabilities have normal credit balances.

**5. d.** The expanded accounting equation is Assets = Liabilities + Owner's Capital – Owner's Drawings + Revenue – Expenses. The other choices are incorrect because (a) both Owner's Drawings and Expenses must be subtracted, not added, and Liabilities should be added to the right side of equation, not to the left side; (b) Owner's Drawings must be subtracted, not added; and (c) Owner's Capital and Revenues must be added, not subtracted.

**6. b.** Preparing an income statement is not part of the recording process. Choices (a) analyzing transactions, (c) entering transactions in a journal, and (d) posting journal entries are all part of the recording process.

**7. a.** The journal is a book of original entry. The other choices are all true statements.

**8. c.** The purchase of supplies on account results in a debit to Supplies and a credit to Accounts Payable. The other choices are incorrect because the purchase of supplies on account results in (a) a debit to Supplies, not Supplies Expense, and a credit to Accounts Payable, not Cash; (b) a debit to Supplies, not Supplies Expense; and (d) a credit to Accounts Payable, not Accounts Receivable.

**9. b.** The correct order of the accounts in the ledger is assets, liabilities, owner's capital, owner's drawing, revenues, expenses. The other choices are incorrect because they do not reflect this order. The order of the accounts in the ledger is (1) balance sheet accounts: assets, liabilities, and owner's equity accounts (owner's capital and owner's drawings); and then (2) income statement accounts: revenues and expenses.

**10. c.** A ledger is a collection of all the accounts maintained by a company. The other choices are incorrect because a ledger (a) contains all account types—assets, liabilities, and owner's equity—not just assets and liability accounts; (b) usually shows accounts in account number order, not alphabetical order; and (d) is not a book of original entry because entries made in the ledger come from the journals (the books of original entry).

**11. d.** Posting transfers journal entries to ledger accounts. The other choices are incorrect because posting (a) occurs after journalizing, (b) transfers journal transaction data to the ledger; and (c) is not an optional step in the recording process.

**12. c.** The balance is $11,000 ($16,000 normal balance – $5,000 payment), not (a) $21,000 or (b) $5,000. Choice (d) is incorrect because the balance can be determined.

**13. a.** A trial balance is a list of accounts with their balances at a given time. The other choices are incorrect because (b) the trial balance does not prove that journalized transactions are mathematically correct; (c) if a journal entry is posted twice, the trial balance will still balance; and (d) the trial balance does not prove that all transactions have been recorded.

**14. c.** The trial balance will not balance in this case because the debit of $1,000 to Owner's Drawings is not equal to the credit of $100 to Cash. The other choices are incorrect because (a) if a correct journal entry is posted twice, the trial balance will still balance; (b) if the purchase of supplies on account is debited to Supplies and credited to Cash, Cash and Accounts Payable will be understated but the trial balance will still balance; and (d) since the debit and credit amounts are the same, the trial balance will still balance but both Accounts Payable and Cash will be overstated.

**15. a.** The total debit column = $5,000 (Cash) + $40,000 (Salaries and Wages Expense) + $10,000 (Rent Expense) + $15,000 (Owner's Drawings) + $61,000 (Equipment) = $131,000. The normal balance for Assets, Expenses, and Owner's Drawings is a debit. The other choices are incorrect because (b) revenue of $85,000 should not be included in the total of $216,000 and its normal balance is a credit; (c) the total of $91,000 is missing the Salaries and Wages Expense of $40,000, which has a normal balance of a debit; and (d) the total of $116,000 is missing the Owner's Drawings of $15,000, which has a normal balance of a debit.

## Practice Brief Exercises

*Identify accounts to be debited and credited.*

**1. (LO 1)** Transactions for the Warren Potter Company for the month of May are presented below. Identify the accounts to be debited and credited for each transaction.

| | | |
|---|---|---|
| May | 1 | Warren Potter invested $22,000 in the business. |
| | 6 | Paid office rent of $900. |
| | 12 | Performed consulting services and billed client $4,400. |
| | 18 | Purchased equipment on account for $1,200. |

### Solution

**1.**

| | | Account Debited | Account Credited |
|---|---|---|---|
| May | 1 | Cash | Owner's Capital |
| | 6 | Rent Expense | Cash |
| | 12 | Accounts Receivable | Service Revenue |
| | 18 | Equipment | Accounts Payable |

*Journalize transactions.*

**2. (LO 2)** Using the data from **Practice Brief Exercise 1**, journalize the transactions (omit explanations).

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## Solution

**2.**

| | | | | | |
|---|---|---|---|---|---|
| May | 1 | Cash | | 22,000 | |
| | | Owner's Capital | | | 22,000 |
| | 6 | Rent Expense | | 900 | |
| | | Cash | | | 900 |
| | 12 | Accounts Receivable | | 4,400 | |
| | | Service Revenue | | | 4,400 |
| | 18 | Equipment | | 1,200 | |
| | | Accounts Payable | | | 1,200 |

**3. (LO 3)** Selected transactions for Carlos Santana Company are presented in journal form below. Post the transactions to T-accounts. Make one T-account for each and determine each account's ending balance.

*Post journal entries to T-accounts.*

J1

| Date | Account Titles and Explanation | Ref. | Debit | Credit |
|---|---|---|---|---|
| June 6 | Cash | | 22,000 | |
| | Owner's Capital | | | 22,000 |
| | (Owner's investment of cash in business) | | | |
| 13 | Accounts Receivable | | 8,200 | |
| | Service Revenue | | | 8,200 |
| | (Billed for services performed) | | | |
| 14 | Cash | | 3,700 | |
| | Accounts Receivable | | | 3,700 |
| | (Received cash in payment of account) | | | |

## Solution

**3.**

**Cash**

| | | | |
|---|---|---|---|
| 6/6 | 22,000 | | |
| 6/14 | 3,700 | | |
| | Bal. 25,700 | | |

**Accounts Receivable**

| | | | |
|---|---|---|---|
| 6/13 | 8,200 | 6/14 | 3,700 |
| | Bal. 4,500 | | |

**Service Revenue**

| | | | |
|---|---|---|---|
| | | 6/13 | 8,200 |
| | | | Bal. 8,200 |

**Owner's Capital**

| | | | |
|---|---|---|---|
| | | 6/6 | 22,000 |
| | | | Bal. 22,000 |

**4. (LO 3)** Selected journal entries for Carlos Santana Company are presented in **Practice Brief Exercise 3.** Post the transactions using the standard form of account.

*Post journal entries to standard form of account.*

## Solution

**4.**

**Cash**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| June 6 | | J1 | 22,000 | | 22,000 |
| 14 | | J1 | 3,700 | | 25,700 |

**Accounts Receivable**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| June 13 | | J1 | 8,200 | | 8,200 |
| 14 | | J1 | | 3,700 | 4,500 |

**Service Revenue**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| June 13 | | J1 | | 8,200 | 8,200 |

**Owner's Capital**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| June 6 | | J1 | | 22,000 | 22,000 |

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*Prepare a trial balance.*

**5. (LO 4)** From the ledger accounts below, prepare a trial balance for Bundy Company at December 31, 2020. List the accounts in the order shown in the textbook. All account balances are normal.

| | | | |
|---|---|---|---|
| Accounts Receivable | $10,000 | Salaries and Wages Expense | $ 2,300 |
| Supplies | 4,100 | Rent Expense | 1,200 |
| Accounts Payable | 3,500 | Owner's Capital | 10,200 |
| Owner's Drawing | 1,100 | Cash | 6,000 |
| Service Revenue | 11,000 | | |

**Solution**

**5.**

**Bundy Company**
**Trial Balance**
**December 31, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $ 6,000 | |
| Accounts Receivable | 10,000 | |
| Supplies | 4,100 | |
| Accounts Payable | | $ 3,500 |
| Owner's Capital | | 10,200 |
| Owner's Drawings | 1,100 | |
| Service Revenue | | 11,000 |
| Salaries and Wages Expense | 2,300 | |
| Rent Expense | 1,200 | |
| | $24,700 | $24,700 |

## Practice Exercises

*Analyze and journalize transactions.*

**1. (LO 2)** Presented below is information related to Hammond Real Estate Agency.

Oct. 1 Lia Berge begins business as a real estate agent with a cash investment of $30,000.
2 Paid rent, $700, on office space.
3 Purchases office equipment for $2,800, on account.
6 Sells a house and lot for Hal Smith; bills Hal Smith $4,400 for realty services performed.
27 Pays $1,100 on the balance related to the transaction of October 3.
30 Receives bill for October utilities, $130 (not paid at this time).

**Instructions**

Journalize the transactions. (You may omit explanations)

**Solution**

**1.** GENERAL JOURNAL

| Date | Account Titles and Explanation | Ref. | Debit | Credit |
|---|---|---|---|---|
| Oct. 1 | Cash | | 30,000 | |
| | Owner's Capital | | | 30,000 |
| 2 | Rent Expense | | 700 | |
| | Cash | | | 700 |
| 3 | Equipment | | 2,800 | |
| | Accounts Payable | | | 2,800 |
| 6 | Accounts Receivable | | 4,400 | |
| | Service Revenue | | | 4,400 |
| 27 | Accounts Payable | | 1,100 | |
| | Cash | | | 1,100 |
| 30 | Utilities Expense | | 130 | |
| | Accounts Payable | | | 130 |

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*Journalize transactions from account data and prepare a trial balance.*

**2. (LO 2, 4)** The T-accounts below summarize the ledger of Depot Company at the end of the first month of operations.

| Cash | | | No. 101 |
|---|---|---|---|
| 4/1 | 16,000 | 4/15 | 700 |
| 4/12 | 1,200 | 4/25 | 1,600 |
| 4/29 | 900 | | |
| 4/30 | 1,600 | | |

| Accounts Receivable | | | No. 112 |
|---|---|---|---|
| 4/7 | 2,900 | 4/29 | 900 |

| Supplies | | | No. 126 |
|---|---|---|---|
| 4/4 | 1,900 | | |

| Accounts Payable | | | No. 201 |
|---|---|---|---|
| 4/25 | 1,600 | 4/4 | 1,900 |

| Unearned Service Revenue | | | No. 209 |
|---|---|---|---|
| | | 4/30 | 1,600 |

| Owner's Capital | | | No. 301 |
|---|---|---|---|
| | | 4/1 | 16,000 |

| Service Revenue | | | No. 400 |
|---|---|---|---|
| | | 4/7 | 2,900 |
| | | 4/12 | 1,200 |

| Salaries and Wages Expense | | | No. 726 |
|---|---|---|---|
| 4/15 | 700 | | |

### Instructions

**a.** Prepare the complete general journal (including explanations) from which the postings to Cash were made.

**b.** Prepare a trial balance at April 30, 2020.

## Solution

**2. a.**

**GENERAL JOURNAL**

| Date | Account Titles and Explanation | Ref. | Debit | Credit |
|---|---|---|---|---|
| Apr. 1 | Cash | | 16,000 | |
| | Owner's Capital | | | 16,000 |
| | (Owner's investment of cash in business) | | | |
| 4 | Supplies | | 1,900 | |
| | Accounts Payable | | | 1,900 |
| | (Purchased supplies on account) | | | |
| 7 | Accounts Receivable | | 2,900 | |
| | Service Revenue | | | 2,900 |
| | (Billed customers for services performed) | | | |
| 12 | Cash | | 1,200 | |
| | Service Revenue | | | 1,200 |
| | (Received cash for services performed) | | | |
| 15 | Salaries and Wages Expense | | 700 | |
| | Cash | | | 700 |
| | (Paid salaries to date) | | | |
| 25 | Accounts Payable | | 1,600 | |
| | Cash | | | 1,600 |
| | (Paid creditors on account) | | | |
| 29 | Cash | | 900 | |
| | Accounts Receivable | | | 900 |
| | (Received cash in payment of account) | | | |
| 30 | Cash | | 1,600 | |
| | Unearned Service Revenue | | | 1,600 |
| | (Received cash for future services) | | | |

**b.**

**Depot Company**
**Trial Balance**
**April 30, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $17,400 | |
| Accounts Receivable | 2,000 | |
| Supplies | 1,900 | |

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| | | |
|---|---|---|
| Accounts Payable | | $ 300 |
| Unearned Service Revenue | | 1,600 |
| Owner's Capital | | 16,000 |
| Service Revenue | | 4,100 |
| Salaries and Wages Expense | 700 | |
| | $22,000 | $22,000 |

## Practice Problem

*Journalize transactions, post, and prepare a trial balance.*

**(LO 1, 2, 3, 4)** Bob Sample opened the Campus Laundromat on September 1, 2020. During the first month of operations, the following transactions occurred.

Sept. 1 Bob invested $20,000 cash in the business.
2 The company paid $1,000 cash for store rent for September.
3 Purchased washers and dryers for $25,000, paying $10,000 in cash and signing a $15,000, 6-month, 12% note payable.
4 Paid $1,200 for a one-year accident insurance policy.
10 Received a bill from the *Daily News* for online advertising of the opening of the laundromat $200.
20 Bob withdrew $700 cash for personal use.
30 The company determined that cash receipts for laundry services for the month were $6,200.

The chart of accounts for the company is the same as that for Pioneer Advertising plus No. 610 Advertising Expense.

### Instructions

**a.** Journalize the September transactions. (Use J1 for the journal page number.)

**b.** Open ledger accounts and post the September transactions.

**c.** Prepare a trial balance at September 30, 2020.

### Solution

**a.** **GENERAL JOURNAL** **J1**

| Date | Account Titles and Explanation | Ref. | Debit | Credit |
|---|---|---|---|---|
| 2020 | | | | |
| Sept. 1 | Cash | 101 | 20,000 | |
| | Owner's Capital | 301 | | 20,000 |
| | (Owner's investment of cash in business) | | | |
| 2 | Rent Expense | 729 | 1,000 | |
| | Cash | 101 | | 1,000 |
| | (Paid September rent) | | | |
| 3 | Equipment | 157 | 25,000 | |
| | Cash | 101 | | 10,000 |
| | Notes Payable | 200 | | 15,000 |
| | (Purchased laundry equipment for cash and 6-month, 12% note payable) | | | |
| 4 | Prepaid Insurance | 130 | 1,200 | |
| | Cash | 101 | | 1,200 |
| | (Paid one-year insurance policy) | | | |
| 10 | Advertising Expense | 610 | 200 | |
| | Accounts Payable | 201 | | 200 |
| | (Received bill from *Daily News* for advertising) | | | |
| 20 | Owner's Drawings | 306 | 700 | |
| | Cash | 101 | | 700 |
| | (Withdrew cash for personal use) | | | |
| 30 | Cash | 101 | 6,200 | |
| | Service Revenue | 400 | | 6,200 |
| | (Received cash for services performed) | | | |

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**b.** **GENERAL LEDGER**

**Cash** **No. 101**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Sept. 1 | | J1 | 20,000 | | 20,000 |
| 2 | | J1 | | 1,000 | 19,000 |
| 3 | | J1 | | 10,000 | 9,000 |
| 4 | | J1 | | 1,200 | 7,800 |
| 20 | | J1 | | 700 | 7,100 |
| 30 | | J1 | 6,200 | | 13,300 |

**Prepaid Insurance** **No. 130**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Sept. 4 | | J1 | 1,200 | | 1,200 |

**Equipment** **No. 157**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Sept. 3 | | J1 | 25,000 | | 25,000 |

**Notes Payable** **No. 200**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Sept. 3 | | J1 | | 15,000 | 15,000 |

**Accounts Payable** **No. 201**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Sept. 10 | | J1 | | 200 | 200 |

**Owner's Capital** **No. 301**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Sept. 1 | | J1 | | 20,000 | 20,000 |

**Owner's Drawings** **No. 306**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Sept. 20 | | J1 | 700 | | 700 |

**Service Revenue** **No. 400**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Sept. 30 | | J1 | | 6,200 | 6,200 |

**Advertising Expense** **No. 610**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Sept. 10 | | J1 | 200 | | 200 |

**Rent Expense** **No. 729**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Sept. 2 | | J1 | 1,000 | | 1,000 |

**c.**

**Campus Laundromat**
**Trial Balance**
**September 30, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $13,300 | |
| Prepaid Insurance | 1,200 | |
| Equipment | 25,000 | |
| Notes Payable | | $15,000 |
| Accounts Payable | | 200 |
| Owner's Capital | | 20,000 |
| Owner's Drawings | 700 | |
| Service Revenue | | 6,200 |
| Advertising Expense | 200 | |
| Rent Expense | 1,000 | |
| | $41,400 | $41,400 |

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## Questions

**1.** Describe the parts of a T-account.

**2.** "The terms debit and credit mean increase and decrease, respectively." Do you agree? Explain.

**3.** Pete Harcourt, a fellow student, contends that the double-entry system means each transaction must be recorded twice. Is Pete correct? Explain.

**4.** Melissa Estes, a beginning accounting student, believes debit balances are favorable and credit balances are unfavorable. Is Melissa correct? Discuss.

**5.** State the rules of debit and credit as applied to (a) asset accounts, (b) liability accounts, and (c) the owner's equity accounts (revenue, expenses, owner's drawings, and owner's capital).

**6.** What is the normal balance for each of the following accounts? (a) Accounts Receivable. (b) Cash. (c) Owner's Drawings. (d) Accounts Payable. (e) Service Revenue. (f) Salaries and Wages Expense. (g) Owner's Capital.

**7.** Indicate whether each of the following accounts is an asset, a liability, or an owner's equity account and whether it has a normal debit or credit balance: (a) Accounts Receivable, (b) Accounts Payable, (c) Equipment, (d) Owner's Drawings, and (e) Supplies.

**8.** For the following transactions, indicate the account debited and the account credited.

**a.** Supplies are purchased on account.

**b.** Cash is received on signing a note payable.

**c.** Employees are paid salaries in cash.

**9.** Indicate whether the following accounts generally will have (a) debit entries only, (b) credit entries only, or (c) both debit and credit entries.

**1.** Cash.
**2.** Accounts Receivable.
**3.** Owner's Drawings.
**4.** Accounts Payable.
**5.** Salaries and Wages Expense.
**6.** Service Revenue.

**10.** What are the basic steps in the recording process?

**11.** What are the advantages of using a journal in the recording process?

**12. a.** When entering a transaction in the journal, should the debit or credit be written first?

**b.** Which should be indented, the debit or credit?

**13.** Describe a compound entry, and provide an example.

**14. a.** Should business transaction debits and credits be recorded directly in the ledger accounts?

**b.** What are the advantages of first recording transactions in the journal and then posting to the ledger?

**15.** The account number is entered as the last step in posting the amounts from the journal to the ledger. What is the advantage of this step?

**16.** Journalize the following business transactions.

**a.** Wes Lee invests $7,000 cash in the business.

**b.** Insurance of $800 is paid for the year.

**c.** Supplies of $2,000 are purchased on account.

**d.** Cash of $8,500 is received for services performed.

**17. a.** What is a ledger?

**b.** What is a chart of accounts and why is it important?

**18.** What is a trial balance and what are its purposes?

**19.** Victor Grimm is confused about how accounting information flows through the accounting system. He believes the flow of information is as follows.

**a.** Debits and credits posted to the ledger.

**b.** Business transaction occurs.

**c.** Information entered in the journal.

**d.** Financial statements are prepared.

**e.** Trial balance is prepared.

Is Victor correct? If not, indicate to Victor the proper flow of the information.

**20.** Two students are discussing the use of a trial balance. They wonder whether the following errors, each considered separately, would prevent the trial balance from balancing.

**a.** The bookkeeper debited Cash for $600 and credited Salaries and Wages Expense for $600 for payment of wages.

**b.** Cash collected on account was debited to Cash for $800 and Service Revenue was credited for $80.

What would you tell them?

**21.** What are the normal balances for **Apple**'s Cash, Accounts Payable, and Interest Expense accounts?

## Brief Exercises

*Indicate debit and credit effects and normal balance.*

**BE2.1 (LO 1)** For each of the following accounts, indicate the effects of (a) a debit and (b) a credit on the accounts and (c) the normal balance of the account.

**1.** Accounts Payable.
**2.** Advertising Expense.
**3.** Service Revenue.
**4.** Accounts Receivable.
**5.** Owner's Capital.
**6.** Owner's Drawings.

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**BE2.2 (LO 1)** Transactions for the Oleg Thorn Company for the month of June are presented below. Identify the accounts to be debited and credited for each transaction. *Identify accounts to be debited and credited.*

June 1 Oleg Thorn invests $5,000 cash in a small welding business of which he is the sole proprietor.
2 Purchases equipment on account for $3,600.
3 $800 cash is paid to landlord for June rent.
12 Sends a bill to K. Johnsen for $400 after completing welding work done on account.

**BE2.3 (LO 2)** Using the data in BE2.2, journalize the transactions. (You may omit explanations.) *Journalize transactions.*

**BE2.4 (LO 2)** **Writing** Shea Jonas, a fellow student, is unclear about the basic steps in the recording process. Identify and briefly explain the steps in the order in which they occur. *Identify and explain steps in recording process.*

**BE2.5 (LO 2)** M. Gonzales has the following transactions during August of the current year. Indicate (a) the effect on the accounting equation and (b) the debit-credit analysis illustrated in the textbook. *Indicate basic and debit-credit analysis.*

Aug. 1 Opens an office as a financial advisor, investing $9,000 in cash.
4 Pays insurance in advance for 6 months, $2,100 cash.
16 Receives $3,600 from clients for services performed.
27 Pays secretary $1,000 salary.

**BE2.6 (LO 2)** Using the data in BE2.5, journalize the transactions. (You may omit explanations.) *Journalize transactions.*

**BE2.7 (LO 3)** Selected transactions for the Walt Bryce Company are presented in journal form below. Post the transactions to T-accounts. Make one T-account for each item and determine each account's ending balance. *Post journal entries to T-accounts.*

J1

| Date | Account Titles and Explanation | Ref. | Debit | Credit |
|---|---|---|---|---|
| May 5 | Accounts Receivable | | 5,400 | |
| | Service Revenue | | | 5,400 |
| | (Billed for services performed) | | | |
| 12 | Cash | | 4,200 | |
| | Accounts Receivable | | | 4,200 |
| | (Received cash in payment of account) | | | |
| 15 | Cash | | 3,000 | |
| | Service Revenue | | | 3,000 |
| | (Received cash for services performed) | | | |

**BE2.8 (LO 3)** Selected journal entries for the Walt Bryce Company are presented in BE2.7. Post the transactions using the standard form of account. *Post journal entries to standard form of account.*

**BE2.9 (LO 4)** From the ledger balances given below, prepare a trial balance for the Amaro Company at June 30, 2020. List the accounts in the order shown in the textbook. All account balances are normal. *Prepare a trial balance.*

Accounts Payable $8,100, Cash $5,800, Owner's Capital $15,000, Owner's Drawings $1,200, Equipment $17,000, Service Revenue $10,000, Accounts Receivable $3,000, Salaries and Wages Expense $5,100, and Rent Expense $1,000.

**BE2.10 (LO 4)** An inexperienced bookkeeper prepared the following trial balance. Prepare a correct trial balance, assuming all account balances are normal. *Prepare a correct trial balance.*

**Shaushank Company**
**Trial Balance**
**December 31, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $10,600 | |
| Prepaid Insurance | | $ 3,500 |
| Accounts Payable | | 3,000 |
| Unearned Service Revenue | 2,200 | |
| Owner's Capital | | 9,000 |
| Owner's Drawings | | 4,500 |
| Service Revenue | | 25,400 |
| Salaries and Wages Expense | 18,600 | |
| Rent Expense | | 2,400 |
| | $31,400 | $47,800 |

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## DO IT! Exercises

*Identify normal balances.*

**DO IT! 2.1 (LO 1)** Tom Rast has just rented space in a strip mall. In this space, he will open a photography studio, to be called "Picture This!" A friend has advised Tom to set up a double-entry set of accounting records in which to record all of his business transactions.

Identify the balance sheet accounts that Tom will likely need to record the transactions needed to open his business. Indicate whether the normal balance of each account is a debit or credit.

*Record business activities.*

**DO IT! 2.2 (LO 2)** Ron Tost engaged in the following activities in establishing his photography studio, Shutter Bug:

1. Opened a bank account in the name of Shutter Bug and deposited $6,500 of his own money into this account as his initial investment.
2. Purchased photography supplies at a total cost of $1,200. The business paid $400 in cash and the balance is on account.
3. Obtained estimates on the cost of photography equipment from three different manufacturers.

Prepare the journal entries to record the transactions. (You may omit explanations.)

*Post transactions.*

**DO IT! 2.3 (LO 3)** Tom Rast recorded the following transactions during the month of April.

| | | | |
|---|---|---|---|
| April 3 | Cash | 3,400 | |
| | Service Revenue | | 3,400 |
| April 16 | Rent Expense | 700 | |
| | Cash | | 700 |
| April 20 | Salaries and Wages Expense | 250 | |
| | Cash | | 250 |

Post these entries to the Cash T-account of the general ledger to determine the ending balance in cash. The beginning balance in cash on April 1 was $1,600.

*Prepare a trial balance.*

**DO IT! 2.4 (LO 4)** The following accounts are taken from the ledger of Macon Company at December 31, 2020.

| | | | | | |
|---|---|---|---|---|---|
| 200 | Notes Payable | $20,000 | 101 | Cash | $ 6,000 |
| 301 | Owner's Capital | 28,000 | 126 | Supplies | 7,000 |
| 157 | Equipment | 80,000 | 729 | Rent Expense | 4,000 |
| 306 | Owner's Drawings | 9,000 | 212 | Salaries and Wages Payable | 3,000 |
| 726 | Salaries and Wages Expense | 38,000 | 201 | Accounts Payable | 11,000 |
| 400 | Service Revenue | 90,000 | 112 | Accounts Receivable | 8,000 |

Prepare a trial balance in good form.

## Exercises

*Analyze statements about accounting and the recording process.*

**E2.1 (LO 1)** Kim Yi has prepared the following list of statements about accounts.

1. An account is an accounting record of either a specific asset or a specific liability.
2. An account shows only increases, not decreases, in the item it relates to.
3. Some items, such as Cash and Accounts Receivable, are combined into one account.
4. An account has a left, or credit side, and a right, or debit side.
5. A simple form of an account consisting of just the account title, the left side, and the right side, is called a T-account.

### Instructions

Identify each statement as true or false. If false, indicate how to correct the statement.

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**E2.2 (LO 1)** Selected transactions for M. Acosta, an interior decorator, in her first month of business, are as follows. *Identify debits, credits, and normal balances.*

Jan. 2 Invested $10,000 cash in business.
3 Purchased used car for $3,000 cash for use in business.
9 Purchased supplies on account for $600.
11 Billed customers $2,400 for services performed.
16 Paid $350 cash for advertising.
20 Received $900 cash from customers billed on January 11.
23 Paid creditor $300 cash on balance owed.
28 Withdrew $1,000 cash for personal use by owner.

### Instructions

For each transaction, indicate the following.

**a.** The basic type of account debited and credited (asset, liability, owner's equity).

**b.** The specific account debited and credited (Cash, Rent Expense, Service Revenue, etc.).

**c.** Whether the specific account is increased or decreased.

**d.** The normal balance of the specific account.

Use the following format, in which the January 2 transaction is given as an example.

| | Account Debited | | | | Account Credited | | | |
|---|---|---|---|---|---|---|---|---|
| Date | (a) Basic Type | (b) Specific Account | (c) Effect | (d) Normal Balance | (a) Basic Type | (b) Specific Account | (c) Effect | (d) Normal Balance |
| Jan. 2 | Asset | Cash | Increase | Debit | Owner's Equity | Owner's Capital | Increase | Credit |

**E2.3 (LO 2)** Data for M. Acosta, interior decorator, are presented in E2.2. *Journalize transactions.*

### Instructions

Journalize the transactions using journal page J1. (You may omit explanations.)

**E2.4 (LO 1)** The following information relates to Royale Real Estate Agency. *Analyze transactions and determine their effect on accounts.*

Oct. 1 James Royale begins business as a real estate agent with a cash investment of $17,000.
2 Hires an administrative assistant.
3 Purchases office furniture for $1,900, on account.
6 Sells a house and lot for C. Rouse; bills C. Rouse $3,800 for realty services performed.
27 Pays $1,300 on the balance related to the transaction of October 3.
30 Pays the administrative assistant $2,500 in salary for October.

### Instructions

Prepare the debit-credit analysis for each transaction as illustrated in the textbook.

**E2.5 (LO 2)** Transaction data for Royale Real Estate Agency are presented in E2.4. *Journalize transactions.*

### Instructions

Journalize the transactions. (You may omit explanations.)

**E2.6 (LO 1, 2)** Lennon Industries had the following transactions. *Analyze transactions and journalize.*

**1.** Borrowed $5,000 from the bank by signing a note.

**2.** Paid $3,900 cash for a computer.

**3.** Purchased $650 of supplies on account.

### Instructions

**a.** Indicate what accounts are increased and decreased by each transaction.

**b.** Journalize each transaction. (Omit explanations.)

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*Analyze transactions and journalize.*

**E2.7 (LO 1, 2)** Halladay Enterprises had the following selected transactions.

1. Bo Halladay invested $4,000 cash in the business.
2. Paid office rent of $840.
3. Performed consulting services and billed a client $5,200.
4. Bo Halladay withdrew $750 cash for personal use.

**Instructions**

**a.** Indicate the effect each transaction has on the accounting equation (Assets = Liabilities + Owner's Equity), using plus and minus signs.

**b.** Journalize each transaction. (Omit explanations.)

*Journalize a series of transactions.*

**E2.8 (LO 2)** Selected transactions for Sophie's Dog Care are as follows during the month of March.

| | | |
|---|---|---|
| March | 1 | Paid monthly rent of $1,200. |
| | 3 | Performed services for $160 on account. |
| | 5 | Performed services for cash of $75. |
| | 8 | Purchased equipment for $600. The company paid cash of $90 and the balance was on account. |
| | 12 | Received cash from customers billed on March 3. |
| | 14 | Paid salaries and wages to employees of $525. |
| | 22 | Paid utilities of $72. |
| | 24 | Borrowed $1,500 from Grafton State Bank by signing a note. |
| | 27 | Paid $220 to repair service for plumbing repairs. |
| | 28 | Paid balance amount owed from equipment purchase on March 8. |
| | 30 | Paid $1,800 for six months of insurance. |

**Instructions**

Journalize the transactions. (Omit explanations.)

*Record journal entries.*

**E2.9 (LO 2)** On April 1, Adventures Travel Agency began operations. The following transactions were completed during the month.

1. Owner invested $24,000 in the business.
2. Obtained a bank loan for $7,000 by issuing a note payable.
3. Paid $11,000 cash to buy equipment.
4. Paid $1,200 cash for April office rent.
5. Paid $1,450 for supplies.
6. Purchased $600 of advertising in the *Daily Herald*, on account.
7. Performed services for $18,000: cash of $2,000 was received from customers, and the balance of $16,000 was billed to customers on account.
8. Cash withdrawal of $400 by owner for personal use.
9. Paid the utility bill for the month, $2,000.
10. Paid *Daily Herald* the amount due in transaction (6).
11. Paid $40 of interest on the bank loan obtained in transaction (2).
12. Paid employees' salaries and wages, $6,400.
13. Received $12,000 cash from customers billed in transaction (7).

**Instructions**

Journalize the transactions. (Omit explanations).

*Analyze statements about the ledger.*

**E2.10 (LO 3)** Alma Ortiz has prepared the following list of statements about the general ledger.

1. The general ledger contains all the asset and liability accounts but no owner's equity accounts.
2. The general ledger is sometimes referred to as simply the ledger.
3. The accounts in the general ledger are arranged in alphabetical order.
4. Each account in the general ledger is numbered for easier identification.
5. The general ledger is a book of original entry.

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### Instructions

Identify each statement as true or false. If false, indicate how to correct the statement.

**E2.11 (LO 3, 4)** Selected transactions from the journal of June Feldman, investment broker, are presented below.

*Post journal entries and prepare a trial balance.*

| Date | Account Titles and Explanation | Ref. | Debit | Credit |
|---|---|---|---|---|
| Aug. 1 | Cash | | 5,000 | |
| | Owner's Capital | | | 5,000 |
| | (Owner's investment of cash in business) | | | |
| 10 | Cash | | 2,600 | |
| | Service Revenue | | | 2,600 |
| | (Received cash for services performed) | | | |
| 12 | Equipment | | 5,000 | |
| | Cash | | | 2,300 |
| | Notes Payable | | | 2,700 |
| | (Purchased equipment for cash and notes payable) | | | |
| 25 | Accounts Receivable | | 1,700 | |
| | Service Revenue | | | 1,700 |
| | (Billed clients for services performed) | | | |
| 31 | Cash | | 900 | |
| | Accounts Receivable | | | 900 |
| | (Receipt of cash on account) | | | |

### Instructions

**a.** Post the transactions to T-accounts.

**b.** Prepare a trial balance at August 31, 2020.

**E2.12 (LO 2, 4)** The T-accounts below summarize the ledger of Negrete Landscaping Company at the end of the first month of operations.

*Journalize transactions from account data and prepare a trial balance.*

**Cash** — No. 101

| | | | |
|---|---|---|---|
| 4/1 | 14,000 | 4/15 | 1,300 |
| 4/12 | 900 | 4/25 | 1,500 |
| 4/29 | 400 | | |
| 4/30 | 1,000 | | |

**Accounts Receivable** — No. 112

| | | | |
|---|---|---|---|
| 4/7 | 3,000 | 4/29 | 400 |

**Supplies** — No. 126

| | | | |
|---|---|---|---|
| 4/4 | 1,800 | | |

**Accounts Payable** — No. 201

| | | | |
|---|---|---|---|
| 4/25 | 1,500 | 4/4 | 1,800 |

**Unearned Service Revenue** — No. 209

| | | | |
|---|---|---|---|
| | | 4/30 | 1,000 |

**Owner's Capital** — No. 301

| | | | |
|---|---|---|---|
| | | 4/1 | 14,000 |

**Service Revenue** — No. 400

| | | | |
|---|---|---|---|
| | | 4/7 | 3,000 |
| | | 4/12 | 900 |

**Salaries and Wages Expense** — No. 726

| | | | |
|---|---|---|---|
| 4/15 | 1,300 | | |

### Instructions

**a.** Prepare the complete general journal (including explanations) from which the postings to Cash were made.

**b.** Prepare a trial balance at April 30, 2020.

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*Journalize transactions from account data and prepare a trial balance.*

**E2.13 (LO 2, 4)** Presented below is the ledger for Shumway Co.

| Cash | | | No. 101 |
|---|---|---|---|
| 10/1 | 3,000 | 10/4 | 400 |
| 10/10 | 750 | 10/12 | 1,500 |
| 10/10 | 4,000 | 10/15 | 350 |
| 10/20 | 500 | 10/30 | 300 |
| 10/25 | 2,000 | 10/31 | 500 |

| Accounts Receivable | | | No. 112 |
|---|---|---|---|
| 10/6 | 800 | 10/20 | 500 |
| 10/20 | 940 | | |

| Supplies | | | No. 126 |
|---|---|---|---|
| 10/4 | 400 | | |

| Equipment | | | No. 157 |
|---|---|---|---|
| 10/3 | 2,000 | | |

| Notes Payable | | | No. 200 |
|---|---|---|---|
| | | 10/10 | 4,000 |

| Accounts Payable | | | No. 201 |
|---|---|---|---|
| 10/12 | 1,500 | 10/3 | 2,000 |

| Owner's Capital | | | No. 301 |
|---|---|---|---|
| | | 10/1 | 3,000 |
| | | 10/25 | 2,000 |

| Owner's Drawings | | | No. 306 |
|---|---|---|---|
| 10/30 | 300 | | |

| Service Revenue | | | No. 400 |
|---|---|---|---|
| | | 10/6 | 800 |
| | | 10/10 | 750 |
| | | 10/20 | 940 |

| Salaries and Wages Expense | | | No. 726 |
|---|---|---|---|
| 10/31 | 500 | | |

| Rent Expense | | | No. 729 |
|---|---|---|---|
| 10/15 | 350 | | |

**Instructions**

**a.** Reproduce the journal entries for the transactions that occurred on October 1, 10, and 20, and provide explanations for each.

**b.** Determine the October 31 balance for each of the accounts above, and prepare a trial balance at October 31, 2020.

*Prepare journal entries and post using standard account form.*

**E2.14 (LO 2, 3)** Selected transactions for Bonnie Donne Company during its first month in business are presented below.

Sept. 1 Invested $10,000 cash in the business.
5 Purchased equipment for $14,000 paying $4,000 in cash and the balance on account.
25 Paid $3,000 cash on balance owed for equipment.
30 Withdrew $900 cash for personal use.

Donne's chart of accounts shows No. 101 Cash, No. 157 Equipment, No. 201 Accounts Payable, No. 301 Owner's Capital, and No. 306 Owner's Drawings.

**Instructions**

**a.** Journalize the transactions on page J1 of the journal. (Omit explanations.)

**b.** Post the transactions using the standard account form.

*Analyze errors and their effects on trial balance.*

**E2.15 (LO 4)** The bookkeeper for J.L. Kang Equipment Repair made a number of errors in journalizing and posting, as described below.

1. A credit posting of $525 to Accounts Receivable was omitted.
2. A debit posting of $750 for Prepaid Insurance was debited to Insurance Expense.
3. A collection from a customer of $100 in payment of its account owed was journalized and posted as a debit to Cash $100 and a credit to Service Revenue $100.
4. A credit posting of $415 to Property Taxes Payable was made twice.
5. A cash purchase of supplies for $250 was journalized and posted as a debit to Supplies $25 and a credit to Cash $25.
6. A debit of $625 to Advertising Expense was posted as $652.

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### Instructions

For each error:

**a.** Indicate whether the trial balance will balance.

**b.** If the trial balance will not balance, indicate the amount of the difference.

**c.** Indicate the trial balance column that will have the larger total.

Consider each error separately. Use the following form, in which error (1) is given as an example.

| Error | (a) In Balance | (b) Difference | (c) Larger Column |
|---|---|---|---|
| (1) | No | $525 | debit |

**E2.16 (LO 4)** The accounts in the ledger of Prompt Delivery Service contain the following balances on July 31, 2020.

*Prepare a trial balance.*

| | | | |
|---|---|---|---|
| Accounts Receivable | $ 7,640 | Prepaid Insurance | $ 1,968 |
| Accounts Payable | 8,394 | Maintenance and Repairs Expense | 961 |
| Cash | ? | Service Revenue | 10,610 |
| Equipment | 45,360 | Owner's Drawings | 700 |
| Gasoline Expense | 758 | Owner's Capital | 38,000 |
| Utilities Expense | 523 | Salaries and Wages Expense | 4,428 |
| Notes Payable | 17,000 | Salaries and Wages Payable | 815 |

### Instructions

Prepare a trial balance with the accounts arranged as illustrated in the chapter and fill in the missing amount for Cash.

**E2.17 (LO 2, 3, 4)** Beyers Security Company provides security services. Selected transactions for Beyers are presented below.

*Journalize transactions, post transactions to T-accounts, and prepare trial balance.*

Oct. 1 Invested $66,000 cash in the business.
2 Hired part-time security consultant. Salary will be $2,000 per month. First day of work will be October 15.
4 Paid one month of rent for building for $2,000.
7 Purchased equipment for $18,000, paying $4,000 cash and the balance on account.
8 Paid $500 for advertising.
10 Received bill for equipment repair cost of $390.
12 Provided security services for event for $3,200 on account.
16 Purchased supplies for $410 on account.
21 Paid balance due from October 7 purchase of equipment.
24 Received and paid utility bill for $148.
27 Received payment from customer for October 12 services performed.
31 Paid employee salaries and wages of $5,100.

### Instructions

**a.** Journalize the transactions. Do not provide explanations.

**b.** Post the transactions to T-accounts.

**c.** Prepare a trial balance at October 31, 2020. (*Hint:* Compute ending balances of T-accounts first.)

## Problems: Set A

**P2.1A (LO 1, 2)** Holz Disc Golf Course was opened on March 1 by Ian Holz. The following selected events and transactions occurred during March.

*Journalize a series of transactions.*

GLS

Mar. 1 Invested $20,000 cash in the business.
3 Purchased Rainbow Golf Land for $15,000 cash. The price consists of land $12,000, shed $2,000, and equipment $1,000. (Make one compound entry.)
5 Paid advertising expenses of $900.
6 Paid cash $600 for a one-year insurance policy.
10 Purchased golf discs and other equipment for $1,050 from Stevenson Company payable in 30 days.

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Mar. 18 Received $1,100 in cash for golf fees (Holz records golf fees as service revenue).
19 Sold 150 coupon books for $10 each. Each book contains 4 coupons that enable the holder to play one round of disc golf.
25 Withdrew $800 cash for personal use.
30 Paid salaries of $250.
30 Paid Stevenson Company in full.
31 Received $2,700 cash for golf fees.

Holz Disc Golf uses the following accounts: Cash, Prepaid Insurance, Land, Buildings, Equipment, Accounts Payable, Unearned Service Revenue, Owner's Capital, Owner's Drawings, Service Revenue, Advertising Expense, and Salaries and Wages Expense.

**Instructions**

Journalize the March transactions.

*Journalize transactions, post, and prepare a trial balance.*

**P2.2A (LO 1, 2, 3, 4)** Vera Ernst is a licensed dentist. During the first month of the operation of her business, the following events and transactions occurred.

April 1 Invested $20,000 cash in her business.
1 Hired a secretary-receptionist at a salary of $700 per week payable monthly.
2 Paid office rent for the month $1,500.
3 Purchased dental supplies on account from Dazzle Company $4,000.
10 Performed dental services and billed insurance companies $5,100.
11 Received $1,000 cash advance from Leah Mataruka for an implant.
20 Received $2,100 cash for services performed from Michael Santos.
30 Paid secretary-receptionist for the month $2,800.
30 Paid $2,600 to Dazzle for accounts payable due.

Vera uses the following chart of accounts: No. 101 Cash, No. 112 Accounts Receivable, No. 126 Supplies, No. 201 Accounts Payable, No. 209 Unearned Service Revenue, No. 301 Owner's Capital, No. 400 Service Revenue, No. 726 Salaries and Wages Expense, and No. 729 Rent Expense.

**Instructions**

**a.** Journalize the transactions.

**b.** Post to the ledger accounts.

c. Trial balance totals $29,600

**c.** Prepare a trial balance on April 30, 2020.

*Journalize transactions, post, and prepare a trial balance.*

**P2.3A (LO 1, 2, 3, 4)** Maquoketa Services was formed on May 1, 2020. The following transactions took place during the first month.

Transactions on May 1:

**1.** Jay Bradford invested $40,000 cash in the company, as its sole owner.

**2.** Hired two employees to work in the warehouse. They will each be paid a salary of $3,050 per month.

**3.** Signed a 2-year rental agreement on a warehouse; paid $24,000 cash in advance for the first year.

**4.** Purchased furniture and equipment costing $30,000. A cash payment of $10,000 was made immediately; the remainder will be paid in 6 months.

**5.** Paid $1,800 cash for a one-year insurance policy on the furniture and equipment.

Transactions during the remainder of the month:

**6.** Purchased basic office supplies for $420 cash.

**7.** Purchased more office supplies for $1,500 on account.

**8.** Total revenues earned were $20,000—$8,000 cash and $12,000 on account.

9. Paid $400 to suppliers for accounts payable due.

**10.** Received $3,000 from customers in payment of accounts receivable.

**11.** Received utility bills in the amount of $380, to be paid next month.

**12.** Paid the monthly salaries of the two employees, totaling $6,100.

**Instructions**

**a.** Prepare journal entries to record each of the events listed. (Omit explanations.)

**b.** Post the journal entries to T-accounts.

c. Trial balance totals $81,480

**c.** Prepare a trial balance as of May 31, 2020.

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**P2.4A (LO 4)** The following trial balance of Sergei Asbrecht Co. does not balance.

*Prepare a correct trial balance.*

Excel

**Sergei Asbrecht Co.**
**Trial Balance**
**June 30, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | | $ 3,140 |
| Accounts Receivable | $ 2,812 | |
| Supplies | 1,200 | |
| Equipment | 2,600 | |
| Accounts Payable | | 3,666 |
| Unearned Service Revenue | 1,100 | |
| Owner's Capital | | 8,000 |
| Owner's Drawings | 800 | |
| Service Revenue | | 2,480 |
| Salaries and Wages Expense | 3,200 | |
| Utilities Expense | 810 | |
| | $12,522 | $17,286 |

Each of the listed accounts has a normal balance per the general ledger. An examination of the ledger and journal reveals the following errors.

1. Cash received from a customer in payment of its account was debited for $850, and Accounts Receivable was credited for the same amount. The actual collection was for $580.
2. The purchase of a computer on account for $710 was recorded as a debit to Supplies for $710 and a credit to Accounts Payable for $710.
3. Services were performed on account for a client for $980. Accounts Receivable was debited for $980, and Service Revenue was credited for $98.
4. A debit posting to Salaries and Wages Expense of $900 was omitted.
5. A payment of a balance due for $306 was credited to Cash for $306 and credited to Accounts Payable for $360.
6. The withdrawal of $600 cash for Sergei's personal use was debited to Salaries and Wages Expense for $600 and credited to Cash for $600.

## Instructions

Prepare a correct trial balance. (*Hint:* It helps to prepare the correct journal entry for the transaction described and compare it to the mistake made.)

Trial balance totals $15,462

**P2.5A (LO 1, 2, 3, 4)** The Starr Theater, owned by Meg Vargo, will begin operations in March. The Starr will be unique in that it will show only triple features of sequential theme movies. As of March 1, the ledger of Starr showed No. 101 Cash $3,000, No. 140 Land $24,000, No. 145 Buildings (concession stand, projection room, ticket booth, and screen) $10,000, No. 157 Equipment $10,000, No. 201 Accounts Payable $7,000, and No. 301 Owner's Capital $40,000. During the month of March, the following events and transactions occurred.

*Journalize transactions, post, and prepare a trial balance.*

GLS

Mar. 2 Rented the three *Indiana Jones* movies to be shown for the first 3 weeks of March. The film rental was $3,500; $1,500 was paid in cash and $2,000 will be paid on March 10.
3 Ordered the *Lord of the Rings* movies to be shown the last 10 days of March. It will cost $200 per night.
9 Received $4,300 cash from admissions.
10 Paid balance due on *Indiana Jones* movies rental and $2,100 on March 1 accounts payable.
11 Starr Theater contracted with Adam Ladd to operate the concession stand. Ladd is to pay 15% of gross concession receipts, payable monthly, for the rental of the concession stand.
12 Paid advertising expenses $900.
20 Received $5,000 cash from customers for admissions.
20 Received the *Lord of the Rings* movies and paid the rental fee of $2,000.
31 Paid salaries of $3,100.
31 Received statement from Adam Ladd showing gross receipts from concessions of $6,000 and the balance due to Starr Theater of $900 ($6,000 × 15%) for March. Ladd paid one-half the balance due and will remit the remainder on April 5.
31 Received $9,000 cash from customers for admissions.

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In addition to the accounts identified above, the chart of accounts includes No. 112 Accounts Receivable, No. 400 Service Revenue, No. 429 Rent Revenue, No. 610 Advertising Expense, No. 726 Salaries and Wages Expense, and No. 729 Rent Expense.

### Instructions

**a.** Enter the beginning balances in the ledger. Insert a check mark (✓) in the reference column of the ledger for the beginning balance.

**b.** Journalize the March transactions. Starr records admission revenue as service revenue, rental of the concession stand as rent revenue, and film rental expense as rent expense.

**c.** Post the March journal entries to the ledger. Assume that all entries are posted from page 1 of the journal.

d. Trial balance totals $64,100

**d.** Prepare a trial balance on March 31, 2020.

## Continuing Case

### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapter 1.)

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**CC2** After researching the different forms of business organization. Natalie Koebel decides to operate "Cookie Creations" as a proprietorship. She then starts the process of getting the business running. In November 2019, the following activities take place.

| | | |
|---|---|---|
| Nov. | 8 | Natalie cashes her U.S. Savings Bonds and receives $520, which she deposits in her personal bank account. |
| | 8 | She opens a bank account under the name "Cookie Creations" and transfers $500 from her personal account to the new account. |
| | 11 | Natalie pays $65 for advertising. |
| | 13 | She buys baking supplies, such as flour, sugar, butter, and chocolate chips, for $125 cash. (*Hint:* Use Supplies account.) |
| | 14 | Natalie starts to gather some baking equipment to take with her when teaching the cookie classes. She has an excellent top-of-the-line food processor and mixer that originally cost her $750. Natalie decides to start using it only in her new business. She estimates that the equipment is currently worth $300. She invests the equipment in the business. |
| | 16 | Natalie realizes that her initial cash investment is not enough. Her grandmother lends her $2,000 cash, for which Natalie signs a note payable in the name of the business. Natalie deposits the money in the business bank account. (*Hint:* The note does not have to be repaid for 24 months. As a result, the note payable should be reported in the accounts as the last liability and also on the balance sheet as the last liability.) |
| | 17 | She buys more baking equipment for $900 cash. |
| | 20 | She teaches her first class and collects $125 cash. |
| | 25 | Natalie books a second class for December 4 for $150. She receives $30 cash in advance as a down payment. |
| | 30 | Natalie pays $1,320 for a one-year insurance policy that will expire on December 1, 2020. |

### Instructions

**a.** Prepare journal entries to record the November transactions.

**b.** Post the journal entries to general ledger accounts.

**c.** Prepare a trial balance at November 30.

## Ethics Cases

**EC2.1** Ellynn Kole is the assistant chief accountant at Doman Company, a manufacturer of computer chips and cellular phones. The company presently has total sales of $20 million. It is the end of the first quarter. Ellynn is hurriedly trying to prepare a trial balance so that quarterly financial statements can be prepared and released to management and the regulatory agencies. The total credits on the trial balance exceed the debits by $1,000. In order to meet the 4 p.m. deadline, Ellynn decides to force the debits and credits into balance by adding the amount of the difference to the Equipment account. She chooses

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Equipment because it is one of the larger account balances; percentage-wise, it will be the least misstated. Ellynn "plugs" the difference! She believes that the difference will not affect anyone's decisions. She wishes that she had another few days to find the error but realizes that the financial statements are already late.

### Instructions

**a.** Who are the stakeholders in this situation?

**b.** What are the ethical issues involved in this case?

**c.** What are Ellynn's alternatives?

**EC2.2** If you haven't already done so, in the not-too-distant future you will prepare a résumé. In some ways, your résumé is like a company's annual report. Its purpose is to enable others to evaluate your past, in an effort to predict your future.

A résumé is your opportunity to create a positive first impression. It is important that it be impressive—but it should also be accurate. In order to increase their job prospects, some people are tempted to "inflate" their résumés by overstating the importance of some past accomplishments or positions. In fact, you might even think that "everybody does it" and that if you don't do it, you will be at a disadvantage.

David Edmondson, the president and CEO of well-known electronics retailer **Radio Shack**, overstated his accomplishments by claiming that he had earned a bachelor's of science degree, when in fact he had not. Apparently, his employer had not done a background check to ensure the accuracy of his résumé. Should Radio Shack have fired him?

**YES:** Radio Shack is a publicly traded company. Investors, creditors, employees, and others doing business with the company will not trust it if its leader is known to have poor integrity. The "tone at the top" is vital to creating an ethical organization.

**NO:** Mr. Edmondson had been a Radio Shack employee for 11 years. He had served the company in a wide variety of positions, and had earned the position of CEO through exceptional performance. While the fact that he lied 11 years earlier on his résumé was unfortunate, his service since then made this past transgression irrelevant. In addition, the company was in the midst of a massive restructuring, which included closing 700 of its 7,000 stores. It could not afford additional upheaval at this time.

### Instructions

Write a response indicating your position regarding this situation. Provide support for your view.

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT2.1** The financial statements of **Apple Inc.** are presented in Appendix A. The complete annual report, including the notes to the financial statements, is available at the company's website.

Apple's financial statements contain the following selected accounts, stated in millions of dollars.

| | |
|---|---|
| Accounts Payable | Cash and Cash Equivalents |
| Accounts Receivable | Research and Development Expense |
| Property, Plant, and Equipment | Inventories |

### Instructions

**a.** Answer the following questions.

**1.** What is the increase and decrease side for each account?

**2.** What is the normal balance for each account?

**b.** Identify the probable other account in the transaction and the effect on that account when:

**1.** Accounts Receivable is decreased.

**2.** Accounts Payable is decreased.

**3.** Inventories are increased.

**c.** Identify the other account(s) that ordinarily would be involved when:

**1.** Research and Development Expense is increased.

**2.** Property, Plant, and Equipment is increased.

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## Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT2.2** **PepsiCo, Inc.**'s financial statements are presented in Appendix B. Financial statement of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

### Instructions

**a.** Based on the information contained in the financial statements, determine the normal balance of the listed accounts for each company.

| PepsiCo | Coca-Cola |
|---|---|
| 1. Inventory | 1. Accounts Receivable |
| 2. Property, Plant, and Equipment | 2. Cash and Cash Equivalents |
| 3. Accounts Payable | 3. Cost of Goods Sold (expense) |
| 4. Interest Expense | 4. Sales (revenue) |

**b.** Identify the other account ordinarily involved when:

**1.** Accounts Receivable is increased.

**2.** Salaries and Wages Payable is decreased.

**3.** Property, Plant, and Equipment is increased.

**4.** Interest Expense is increased.

## Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT2.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

### Instructions

**a.** Based on the information contained in the financial statements, determine the normal balance of the listed accounts for each company.

| Amazon | Wal-Mart |
|---|---|
| 1. Interest Expense | 1. Net Product Revenues |
| 2. Cash and Cash Equivalents | 2. Inventories |
| 3. Accounts Payable | 3. Cost of Sales |

**b.** Identify the other account ordinarily involved when:

**1.** Accounts Receivable is increased.

**2.** Interest Expense is increased.

**3.** Salaries and Wages Payable is decreased.

**4.** Service Revenue is increased.

## Real-World Focus

**CT2.4** Much information about specific companies is available on the Internet. Such information includes basic descriptions of the company's location, activities, industry, financial health, and financial performance.

### Instructions

Go to the **Yahoo! Finance** website and then answer the following questions.

**a.** What is the company's industry?

**b.** What is the company's total sales?

**c.** What is the company's net income?

**d.** What are the names of four of the company's competitors?

**e.** Choose one of these competitors.

**f.** What is this competitor's name? What are its sales? What is its net income?

**g.** Which of these two companies is larger by size of sales? Which one reported higher net income?

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**CT2.5** The January 27, 2011, edition of the *New York Times* contains an article by Richard Sandomir entitled "N.F.L. Finances, as Seen Through Packers' Records." The author of the article discusses the fact that the **Green Bay Packers** are the only NFL team that publicly publishes its annual report.

### Instructions

Read the article and answer the following questions.

**a.** Why are the Green Bay Packers the only professional football team to publish and distribute an annual report?

**b.** Why is the football players' labor union particularly interested in the Packers' annual report?

**c.** In addition to the players' labor union, what other outside party might be interested in the annual report?

**d.** Even though the Packers' revenue increased in recent years, the company's operating profit fell significantly. How does the article explain this decline?

## Communication Activity

**CT2.6** Melia's Maid Company offers home-cleaning service. Two recurring transactions for the company are billing customers for services performed and paying employee salaries. For example, on March 15, bills totaling $6,000 were sent to customers and $2,000 was paid in salaries to employees.

### Instructions

Write a memo to your instructor that explains and illustrates the steps in the recording process for each of the March 15 transactions. Use the format illustrated in the textbook.

## All About You

**CT2.7** Every company needs to plan in order to move forward. Its top management must consider where it wants the company to be in three to five years. Like a company, you need to think about where you want to be three to five years from now, and you need to start taking steps now in order to get there.

### Instructions

Provide responses to each of the following items.

**a.** Where would you like to be working in three to five years? Describe your plan for getting there by identifying between five and 10 specific steps that you need to take.

**b.** In order to get the job you want, you will need a résumé. Your résumé is the equivalent of a company's annual report. It needs to provide relevant and reliable information about your past accomplishments so that employers can decide whether to "invest" in you. Do a search on the Internet to find a good résumé format. What are the basic elements of a résumé?

**c.** A company's annual report provides information about a company's accomplishments. In order for investors to use the annual report, the information must be reliable; that is, users must have faith that the information is accurate and believable. How can you provide assurance that the information on your résumé is reliable?

**d.** Prepare a résumé assuming that you have accomplished the five to 10 specific steps you identified in part (a). Also, provide evidence that would give assurance that the information is reliable.

## Considering People, Planet, and Profit

**CT2.8** Auditors provide a type of certification of corporate financial statements. Certification is used in many other aspects of business as well. For example, it plays a critical role in the sustainability movement. The February 7, 2012, issue of the *New York Times* contained an article by S. Amanda Caudill entitled "Better Lives in Better Coffee," which discusses the role of certification in the coffee business.

### Instructions

Conduct an Internet search to locate and read the article, and then answer the following questions.

**a.** The article mentions three different certification types that coffee growers can obtain from three different certification bodies. Using financial reporting as an example, what potential problems might the existence of multiple certification types present to coffee purchasers?

**b.** According to the author, which certification is most common among coffee growers? What are the possible reasons for this?

**c.** What social and environmental benefits are coffee certifications trying to achieve? Are there also potential financial benefits to the parties involved?

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# A Look at IFRS

**LEARNING OBJECTIVE 5**

Compare the procedures for the recording process under GAAP and IFRS.

International companies use the same set of procedures and records to keep track of transaction data. Thus, the material in Chapter 2 dealing with the account, general rules of debit and credit, and steps in the recording process—the journal, ledger, and chart of accounts—is the same under both GAAP and IFRS.

## Key Points

Following are the key similarities and differences between GAAP and IFRS as related to the recording process.

### Similarities

- Transaction analysis is the same under IFRS and GAAP.
- Both the IASB and the FASB go beyond the basic definitions provided in the textbook for the key elements of financial statements, that is assets, liabilities, equity, revenue, and expenses. The implications of the expanded definitions are discussed in more advanced accounting courses.
- As shown in the textbook, dollar signs are typically used only in the trial balance and the financial statements. The same practice is followed under IFRS, using the currency of the country where the reporting company is headquartered.
- A trial balance under IFRS follows the same format as shown in the textbook.

### Differences

- IFRS relies less on historical cost and more on fair value than do FASB standards.
- Internal controls are a system of checks and balances designed to prevent and detect fraud and errors. While most public U.S. companies have these systems in place, many non-U.S. companies have never completely documented the controls nor had an independent auditors attest to their effectiveness.

## Looking to the Future

The basic recording process shown in this textbook is followed by companies across the globe. It is unlikely to change in the future. The definitional structure of assets, liabilities, equity, revenues, and expenses may change over time as the IASB and FASB evaluate their overall conceptual framework for establishing accounting standards.

# IFRS Practice

## IFRS Self-Test Questions

1. Which statement is **correct** regarding IFRS?
   - **a.** IFRS reverses the rules of debits and credits, that is, debits are on the right and credits are on the left.
   - **b.** IFRS uses the same process for recording transactions as GAAP.
   - **c.** The chart of accounts under IFRS is different because revenues follow assets.
   - **d.** None of the above statements are correct.
2. The expanded accounting equation under IFRS is as follows:
   - **a.** Assets = Liabilities + Owner's Capital + Owner's Drawings + Revenues – Expenses.
   - **b.** Assets + Liabilities = Owner's Capital + Owner's Drawings + Revenues – Expenses.
   - **c.** Assets = Liabilities + Owner's Capital – Owner's Drawings + Revenues – Expenses.
   - **d.** Assets = Liabilities + Owner's Capital + Owner's Drawings – Revenues – Expenses.
3. A trial balance:
   - **a.** is the same under IFRS and GAAP.
   - **b.** proves that transactions are recorded correctly.
   - **c.** proves that all transactions have been recorded.
   - **d.** will not balance if a correct journal entry is posted twice.
4. One difference between IFRS and GAAP is that:
   - **a.** GAAP uses accrual-accounting concepts and IFRS uses primarily the cash basis of accounting.
   - **b.** IFRS uses a different posting process than GAAP.

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**c.** IFRS uses more fair value measurements than GAAP.

**d.** the limitations of a trial balance are different between IFRS and GAAP.

5. The general policy for using proper currency signs (dollar, yen, pound, etc.) is the same for both IFRS and this textbook. This policy is as follows:

**a.** Currency signs only appear in ledgers and journal entries.

**b.** Currency signs are only shown in the trial balance.

**c.** Currency signs are shown for all compound journal entries.

**d.** Currency signs are shown in trial balances and financial statements.

## International Financial Reporting Problem: Louis Vuitton

**IFRS2.1** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

### Instructions

Describe in which statement each of the following items is reported, and the position in the statement (e.g., current asset).

**a.** Other operating income and expenses.

**b.** Cash and cash equivalents.

**c.** Trade accounts payable.

**d.** Cost of net financial debt.

### Answers to IFRS Self-Test Questions

**1.** b **2.** c **3.** a **4.** c **5.** d

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# Adjusting the Accounts

## Chapter Preview

In Chapter 1, you learned a neat little formula: Net income = Revenues – Expenses. In Chapter 2, you learned some rules for recording revenue and expense transactions. Guess what? Things are not really that nice and neat. In fact, it is often difficult for companies to determine in what time period they should report some revenues and expenses. In other words, in measuring net income, timing is everything.

## Feature Story

### Keeping Track of Groupons

Who doesn't like buying things at a discount? That's why it's not surprising that three years after it started as a company, **Groupon, Inc.** was estimated to be worth $16 billion. This translates into an average increase in value of almost $15 million per day.

Now consider that Groupon had previously been estimated to be worth even more than that. What happened? Well, accounting regulators and investors began to question the way that Groupon had accounted for some of its transactions. Groupon sells coupons ("groupons"), so how hard can it be to accurately account for that? It turns out that accounting for coupons is not as easy as you might think.

First, consider what happens when Groupon makes a sale. Suppose it sells a groupon for $30 for Highrise Hamburgers. When it receives the $30 from the customer, it must turn over half of that amount ($15) to Highrise Hamburgers. So should Groupon record revenue for the full $30 or just $15? Until recently, Groupon recorded the full $30. But, in response to an SEC ruling on the issue, Groupon now records revenue of $15 instead.

A second issue is a matter of timing. When should Groupon record this $15 revenue? Should it record the revenue when it sells the groupon, or must it wait until the customer uses the groupon at Highrise Hamburgers? You can find the answer to

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this question in the notes to Groupon's financial statements. It recognizes the revenue once "the number of customers who purchase the daily deal exceeds the predetermined threshold, the Groupon has been electronically delivered to the purchaser and a listing of Groupons sold has been made available to the merchant."

The accounting becomes even more complicated when you consider the company's loyalty programs. Groupon offers free or discounted groupons to its subscribers for doing things such as referring new customers or participating in promotions. These groupons are to be used for future purchases, yet the company must record the expense at the time the customer receives the groupon. The cost of these programs is huge for Groupon, so the timing of this expense can definitely affect its reported income.

Finally, Groupon, like all other companies, relies on many estimates in its financial reporting. For example, Groupon reports that "estimates are utilized for, but not limited to, stock-based compensation, income taxes, valuation of acquired goodwill and intangible assets, customer refunds, contingent liabilities and the depreciable lives of fixed assets." It notes that "actual results could differ materially from those estimates." So, next time you use a coupon, think about what that means for the company's accountants!

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Explain the accrual basis of accounting and the reasons for adjusting entries. | • Fiscal and calendar years<br>• Accrual- vs. cash-basis accounting<br>• Recognizing revenues and expenses<br>• Need for adjusting entries<br>• Types of adjusting entries | **DO IT! 1** Timing Concepts |
| **LO 2** Prepare adjusting entries for deferrals. | • Prepaid expenses<br>• Unearned revenues | **DO IT! 2** Adjusting Entries for Deferrals |
| **LO 3** Prepare adjusting entries for accruals. | • Accrued revenues<br>• Accrued expenses<br>• Summary of basic relationships | **DO IT! 3** Adjusting Entries for Accruals |
| **LO 4** Describe the nature and purpose of an adjusted trial balance. | • Preparing the adjusted trial balance<br>• Preparing financial statements | **DO IT! 4** Trial Balance |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

# Accrual-Basis Accounting and Adjusting Entries

**LEARNING OBJECTIVE 1**

Explain the accrual basis of accounting and the reasons for adjusting entries.

If we could wait to prepare financial statements until a company ended its operations, no adjustments would be needed. At that point, we could easily determine its final balance sheet and the amount of lifetime income it earned.

However, most companies need feedback about how well they are performing during a period of time. For example, management usually wants monthly financial statements. The Internal Revenue Service requires all businesses to file annual tax returns. Therefore, **accountants**

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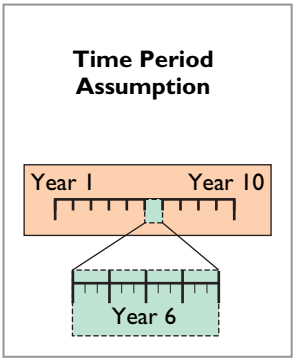
**divide the economic life of a business into artificial time periods**. This convenient assumption is referred to as the **time period assumption** (see **Alternative Terminology**).

Many business transactions affect more than one of these arbitrary time periods. For example, the airplanes purchased by **Southwest Airlines** five years ago are still in use today. It would not make sense to expense the full cost of the airplanes at the time of purchase because they will be used for many subsequent periods. Instead, companies must therefore allocate the costs to the periods of use (how much of the cost of an airplane contributed to operations this year?).

**ALTERNATIVE TERMINOLOGY**

**The time period assumption is also called the *periodicity assumption*.**




## Fiscal and Calendar Years

Both small and large companies prepare financial statements periodically in order to assess their financial condition and results of operations. **Accounting time periods are generally a month, a quarter, or a year.** Monthly and quarterly time periods are called **interim periods**. Most large companies must prepare both quarterly and annual financial statements.

An accounting time period that is one year in length is a **fiscal year**. A fiscal year usually begins with the first day of a month and ends 12 months later on the last day of a month. Many businesses use the **calendar year** (January 1 to December 31) as their accounting period. Some do not. Companies whose fiscal year differs from the calendar year include **Delta Air Lines**, June 30, and **The Walt Disney Company**, September 30. Sometimes a company's year-end will vary from year to year. For example, **PepsiCo**'s fiscal year ends on the Friday closest to December 31, which was December 27 in 2014 and December 26 in 2015.

## Accrual- versus Cash-Basis Accounting

What you will learn in this chapter is **accrual-basis accounting**. Under the accrual basis, companies record transactions that change a company's financial statements **in the periods in which the events occur**. For example, using the accrual basis to determine net income means companies recognize revenues when they perform services (rather than when they receive cash). It also means recognizing expenses when incurred (rather than when paid).

An alternative to the accrual basis is the cash basis. Under **cash-basis accounting**, companies record revenue at the time they receive cash. They record an expense at the time they pay out cash. The cash basis seems appealing due to its simplicity, but it often produces misleading financial statements. For example, it fails to record revenue for a company that has performed services but has not yet received payment. As a result, the cash basis may not recognize revenue in the period that a performance obligation is satisfied.

**Accrual-basis accounting is therefore in accordance with generally accepted accounting principles (GAAP).** Individuals and some small companies, however, do use cash-basis accounting. The cash basis is justified for small businesses because they often have few receivables and payables. Medium and large companies use accrual-basis accounting.

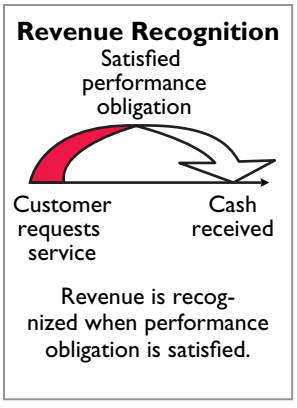
## Recognizing Revenues and Expenses

It can be difficult to determine when to report revenues and expenses. The revenue recognition principle and the expense recognition principle help in this task.

### Revenue Recognition Principle

When a company agrees to perform a service or sell a product to a customer, it has a **performance obligation**. When the company meets this performance obligation, it recognizes revenue. The **revenue recognition principle** therefore requires that companies recognize revenue in the accounting period in which the performance obligation is satisfied. A company satisfies its performance obligation by performing a service or providing a good to a customer.

To illustrate, assume that Dave's Dry Cleaning cleans clothing on June 30 but customers do not claim and pay for their clothes until the first week of July. Dave's should record revenue in June when it performed the service (satisfied the performance obligation) rather than in July when it received the cash. At June 30, Dave's would report a receivable on its balance sheet and revenue in its income statement for the service performed.



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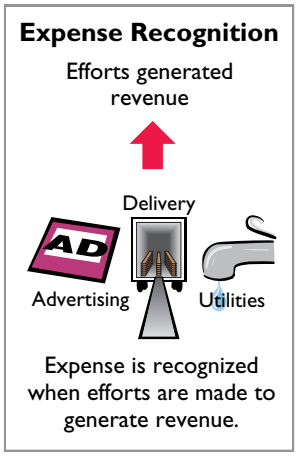
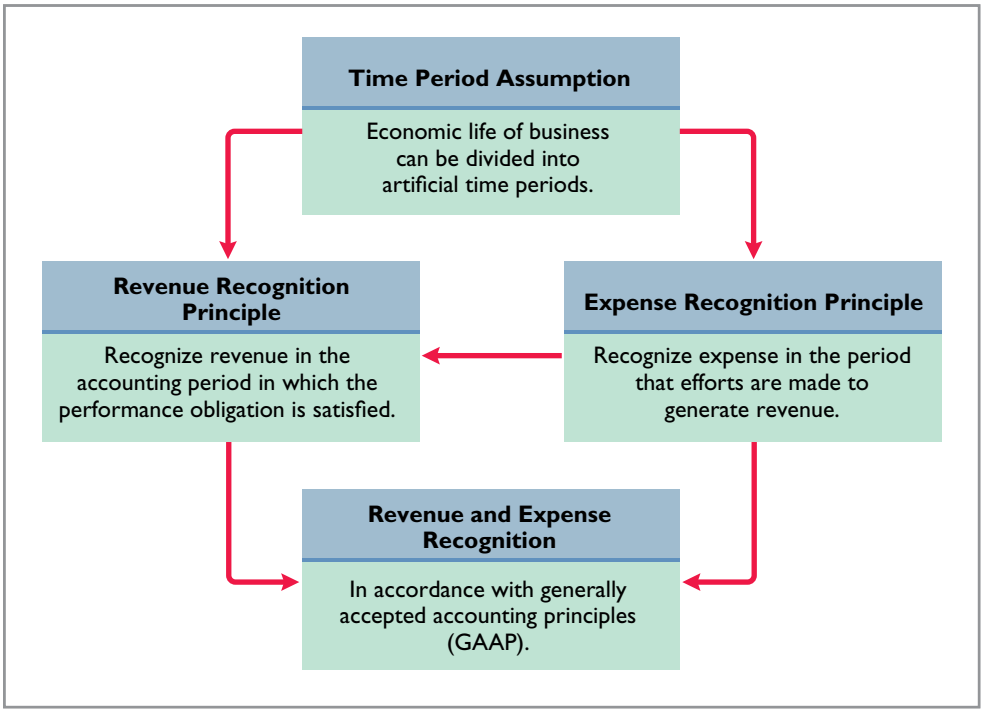



## Expense Recognition Principle

Accountants follow a simple rule in recognizing expenses: "Let the expenses follow the revenues." Thus, expense recognition is tied to revenue recognition. In the dry cleaning example, this means that Dave's should report the salary expense incurred in performing the June 30 cleaning service in the same period in which it recognizes the service revenue. The critical issue in expense recognition is when the expense makes its contribution to revenue. This may or may not be the same period in which the expense is paid. If Dave's does not pay the salary incurred on June 30 until July, it would report salaries payable on its June 30 balance sheet.

This practice of expense recognition is referred to as the **expense recognition principle**. It requires that companies recognize expenses in the period in which they make efforts (consume assets or incur liabilities) to generate revenue. The term matching is sometimes used in expense recognition to indicate the relationship between the effort expended and the revenue generated. **Illustration 3.1** summarizes the revenue and expense recognition principles.

**ILLUSTRATION 3.1** **GAAP relationships in revenue and expense recognition**


Time Period Assumption
Economic life of business can be divided into artificial time periods.
Revenue Recognition Principle
Recognize revenue in the accounting period in which the performance obligation is satisfied.
Expense Recognition Principle
Recognize expense in the period that efforts are made to generate revenue.
Revenue and Expense Recognition
In accordance with generally accepted accounting principles (GAAP).

## Investor Insight Apple Inc.

PhotoAlto/James Hardy/Getty Images, Inc.

### Reporting Revenue Accurately

Until recently, electronics manufacturer **Apple** was required to spread the revenues from iPhone sales over the two year period following the sale of the phone. Accounting standards required this because Apple was obligated to provide software updates after the phone was sold. Since Apple had service obligations after the initial date of sale, it was forced to spread the revenue over a two-year period.

As a result, the rapid growth of iPhone sales was not fully reflected in the revenue amounts reported in Apple's income statement. A new accounting standard now enables Apples to report much more of its iPhone revenue at the point of sale. It was estimated that under the new rule revenues would have been about 17% higher and earnings per share almost 50% higher.

**In the past, why was it argued that Apple should spread the recognition of iPhone revenue over a two-year period, rather than recording it upfront? (Go to WileyPLUS for this answer and additional questions.)**

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## The Need for Adjusting Entries

In order for revenues to be recorded in the period in which services are performed and for expenses to be recognized in the period in which they are incurred, companies make adjusting entries. **Adjusting entries ensure that the revenue recognition and expense recognition principles are followed** (see International Note).

Adjusting entries are necessary because the **trial balance**—the first pulling together of the transaction data—may not contain up-to-date and complete data. This is true for several reasons:

1. Some events are not recorded daily because it is not efficient to do so. Examples are the use of supplies and the earning of wages by employees.
2. Some costs are not recorded during the accounting period because these costs expire with the passage of time rather than as a result of recurring daily transactions. Examples are charges related to the use of buildings and equipment, rent, and insurance.
3. Some items may be unrecorded. An example is a utility service bill that will not be received until the next accounting period.

**Adjusting entries are required every time a company prepares financial statements.** The company analyzes each account in the trial balance to determine whether it is complete and up-to-date for financial statement purposes. **Every adjusting entry will include one income statement account and one balance sheet account.**

**INTERNATIONAL NOTE**

**Internal controls are a system of checks and balances designed to detect and prevent fraud and errors. The Sarbanes-Oxley Act requires U.S. companies to enhance their systems of internal control. However, many foreign companies do not have to meet strict internal control requirements. Some U.S. companies believe that this gives foreign firms an unfair advantage because developing and maintaining internal controls can be very expensive.**

## Types of Adjusting Entries

Adjusting entries are classified as either **deferrals** or **accruals**. As Illustration 3.2 shows, each of these classes has two subcategories.

**Deferrals:**

1. **Prepaid expenses**: Expenses paid in cash before they are used or consumed.
2. **Unearned revenues**: Cash received before services are performed.

**Accruals:**

1. **Accrued revenues**: Revenues for services performed but not yet received in cash or recorded.
2. **Accrued expenses**: Expenses incurred but not yet paid in cash or recorded.

**ILLUSTRATION 3.2**
**Categories of adjusting entries**

Subsequent sections give examples of each type of adjustment. Each example is based on the October 31 trial balance of Pioneer Advertising from Chapter 2, reproduced in Illustration 3.3.

**Pioneer Advertising**
**Trial Balance**
**October 31, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $15,200 | |
| Supplies | 2,500 | |
| Prepaid Insurance | 600 | |
| Equipment | 5,000 | |
| Notes Payable | | $ 5,000 |
| Accounts Payable | | 2,500 |
| Unearned Service Revenue | | 1,200 |
| Owner's Capital | | 10,000 |
| Owner's Drawings | 500 | |
| Service Revenue | | 10,000 |
| Salaries and Wages Expense | 4,000 | |
| Rent Expense | 900 | |
| | $28,700 | $28,700 |

**ILLUSTRATION 3.3**
**Trial balance**

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We assume that Pioneer uses an accounting period of one month. Thus, monthly adjusting entries are made. The entries are dated October 31.

### DO IT! 1 | Timing Concepts

Below is a list of timing concepts in the left column, with a description of the concept in the right column. There are more descriptions provided than concepts. Match the description to the concept.

**1.** ____Accrual-basis accounting.

**2.** ____Calendar year.

**3.** ____Time period assumption.

**4.** ____Expense recognition principle.

(a) Monthly and quarterly time periods.
(b) Efforts (expenses) should be recognized in the period in which a company uses assets or incurs liabilities to generate results (revenues).
(c) Accountants divide the economic life of a business into artificial time periods.
(d) Companies record revenues when they receive cash and record expenses when they pay out cash.
(e) An accounting time period that starts on January 1 and ends on December 31.
(f) Companies record transactions in the period in which the events occur.

**ACTION PLAN**

- Review the definitions of the timing concepts in the Glossary Review section.
- Study carefully the revenue recognition principle, the expense recognition principle, and the time period assumption.

**Solution**

**1.** f **2.** e **3.** c **4.** b

Related exercise material: **BE3.1, BE3.2, DO IT! 3.1, E3.1, E3.2, and E3.3.**

# Adjusting Entries for Deferrals

**LEARNING OBJECTIVE 2**

Prepare adjusting entries for deferrals.

ANALYZE → JOURNALIZE → POST → TRIAL BALANCE → **Journalize and post adjusting entries: deferrals/accruals** → ADJUSTED TRIAL BALANCE → FINANCIAL STATEMENTS → CLOSING ENTRIES → POST-CLOSING TRIAL BALANCE

To defer means to postpone or delay. **Deferrals** are expenses or revenues that are recognized at a date later than the point when cash was originally exchanged. The two types of deferrals are prepaid expenses and unearned revenues.

## Prepaid Expenses

When companies record payments of expenses that will benefit more than one accounting period, they record an asset called **prepaid expenses** or **prepayments**. When expenses are prepaid, an asset account is increased (debited) to show the service or benefit that the company will receive in the future. Examples of common prepayments are insurance, supplies, advertising, and rent. In addition, companies make prepayments when they purchase buildings and equipment.

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**Prepaid expenses are costs that expire either with the passage of time** (e.g., rent and insurance) **or through use** (e.g., supplies). The expiration of these costs does not require daily entries, which would be impractical and unnecessary. Accordingly, companies postpone the recognition of such cost expirations until they prepare financial statements. At each statement date, they make adjusting entries to record the expenses applicable to the current accounting period and to show the remaining amounts in the asset accounts.

Prior to adjustment, assets are overstated and expenses are understated. Therefore, as shown in Illustration 3.4, **an adjusting entry for prepaid expenses results in an increase (a debit) to an expense account and a decrease (a credit) to an asset account**.

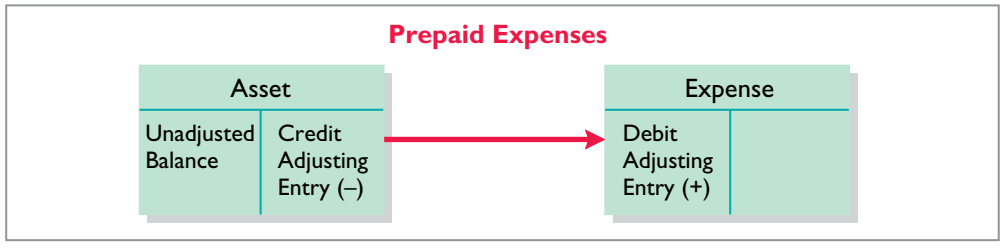


**ILLUSTRATION 3.4** **Adjusting entries for prepaid expenses**

Let's look in more detail at some specific types of prepaid expenses, beginning with supplies.

## Supplies

The purchase of supplies, such as paper and envelopes, results in an increase (a debit) to an asset account. During the accounting period, the company uses supplies. Rather than record supplies expense as the supplies are used, companies recognize supplies expense at the **end** of the accounting period. At the end of the accounting period, the company counts the remaining supplies. As shown in Illustration 3.5, the difference between the unadjusted balance in the Supplies (asset) account and the actual cost of supplies on hand represents the supplies used (an expense) for that period.

Recall from Chapter 2 that Pioneer Advertising purchased supplies costing $2,500 on October 5. Pioneer recorded the purchase by increasing (debiting) the asset Supplies. This account shows a balance of $2,500 in the October 31 trial balance. An inventory count at the close of business on October 31 reveals that $1,000 of supplies are still on hand. Thus, the cost of supplies used is $1,500 ($2,500 – $1,000). This use of supplies decreases an asset, Supplies. It also decreases owner's equity by increasing an expense account, Supplies Expense. This is shown in Illustration 3.5.

**ILLUSTRATION 3.5** **Adjustment for supplies**

**Basic Analysis**

The expense Supplies Expense is increased $1,500; the asset Supplies is decreased $1,500.

**Equation Analysis**

(1) Assets: Supplies –$1,500 = Liabilities + Owner's Equity: Supplies Expense –$1,500

**Debit–Credit Analysis**

Debits increase expenses: debit Supplies Expense $1,500.
Credits decrease assets: credit Supplies $1,500.

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 31 | Supplies Expense | 631 | 1,500 | |
| | Supplies | 126 | | 1,500 |
| | (To record supplies used) | | | |

**Posting**

| Supplies | | | | 126 |
|---|---|---|---|---|
| Oct. 5 | 2,500 | Oct. 31 | Adj. 1,500 | |
| Oct. 31 | Bal. 1,000 | | | |

| Supplies Expense | | | | 631 |
|---|---|---|---|---|
| Oct. 31 | Adj. 1,500 | | | |
| Oct. 31 | Bal. 1,500 | | | |

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After adjustment, the asset account Supplies shows a balance of $1,000, which is equal to the cost of supplies on hand at the statement date. In addition, Supplies Expense shows a balance of $1,500, which equals the cost of supplies used in October. **If Pioneer does not make the adjusting entry, October expenses are understated and net income is overstated by $1,500. Moreover, both assets and owner's equity will be overstated by $1,500 on the October 31 balance sheet.**

## Insurance

**Insurance**

Oct. 4

Insurance purchased; record asset

| Insurance Policy | | | |
|---|---|---|---|
| Oct $50 | Nov $50 | Dec $50 | Jan $50 |
| Feb $50 | March $50 | April $50 | May $50 |
| June $50 | July $50 | Aug $50 | Sept $50 |
| 1 YEAR $600 | | | |

Oct. 31 Insurance expired; record insurance expense

Companies purchase insurance to protect themselves from losses due to fire, theft, and unforeseen events. Insurance must be paid in advance, often for multiple months. The cost of insurance (premiums) paid in advance is recorded as an increase (debit) in the asset account Prepaid Insurance. At the financial statement date, companies increase (debit) Insurance Expense and decrease (credit) Prepaid Insurance for the cost of insurance that has expired during the period.

On October 4, Pioneer Advertising paid $600 for a one-year fire insurance policy. Coverage began on October 1. Pioneer recorded the payment by increasing (debiting) Prepaid Insurance. This account shows a balance of $600 in the October 31 trial balance. Insurance of $50 ($600 ÷ 12) expires each month. The expiration of prepaid insurance decreases an asset, Prepaid Insurance. It also decreases owner's equity by increasing an expense account, Insurance Expense.

As shown in **Illustration 3.6**, the asset Prepaid Insurance shows a balance of $550, which represents the unexpired cost for the remaining 11 months of coverage. At the same time, the balance in Insurance Expense equals the insurance cost that expired in October. **If Pioneer does not make this adjustment, October expenses are understated by $50 and net income is overstated by $50. Moreover, both assets and owner's equity will be overstated by $50 on the October 31 balance sheet.**

**ILLUSTRATION 3.6** **Adjustment for insurance**

**Basic Analysis**

The expense Insurance Expense is increased $50; the asset Prepaid Insurance is decreased $50.

**Equation Analysis**

(2) Assets = Liabilities + Owner's Equity

Prepaid Insurance −$50 = Insurance Expense −$50

**Debit–Credit Analysis**

Debits increase expenses: debit Insurance Expense $50.
Credits decrease assets: credit Prepaid Insurance $50.

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 31 | Insurance Expense | 722 | 50 | |
| | Prepaid Insurance | 130 | | 50 |
| | (To record insurance expired) | | | |

**Posting**

| Prepaid Insurance 130 | | | |
|---|---|---|---|
| Oct. 4 | 600 | Oct. 31 | Adj. 50 |
| Oct. 31 | Bal. 550 | | |

| Insurance Expense 722 | | | |
|---|---|---|---|
| Oct. 31 | Adj. 50 | | |
| Oct. 31 | Bal. 50 | | |

## Depreciation

A company typically owns a variety of assets that have long lives, such as buildings, equipment, and motor vehicles. The period of service is referred to as the **useful life** of the asset. Because a building is expected to be of service for many years, it is recorded as an asset, rather than an expense, on the date it is acquired. As explained in Chapter 1, companies record such assets **at cost**, as required by the historical cost principle. To follow the expense recognition principle, companies allocate a portion of this cost as an expense during each period of the

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asset's useful life. **Depreciation** is the process of allocating the cost of an asset to expense over its useful life.

**Need for Adjustment.** The acquisition of long-lived assets is essentially a long-term prepayment for the use of an asset. An adjusting entry for depreciation is needed to recognize the cost that has been used (an expense) during the period and to report the unused cost (an asset) at the end of the period. One very important point to understand: **Depreciation is an allocation concept, not a valuation concept.** That is, depreciation **allocates an asset's cost to the periods in which it is used**. **Depreciation does not attempt to report the actual change in the value of the asset.**

For Pioneer Advertising, assume that depreciation on the equipment is $480 a year, or $40 per month. As shown in **Illustration 3.7**, rather than decrease (credit) the asset account directly, Pioneer instead credits Accumulated Depreciation—Equipment. Accumulated Depreciation is called a **contra asset account**. Such an account is offset against an asset account on the balance sheet (see **Helpful Hint**). Thus, the Accumulated Depreciation—Equipment account offsets the asset Equipment. **This account keeps track of the total amount of depreciation expense taken over the life of the asset.** To keep the accounting equation in balance, Pioneer decreases owner's equity by increasing an expense account, Depreciation Expense.

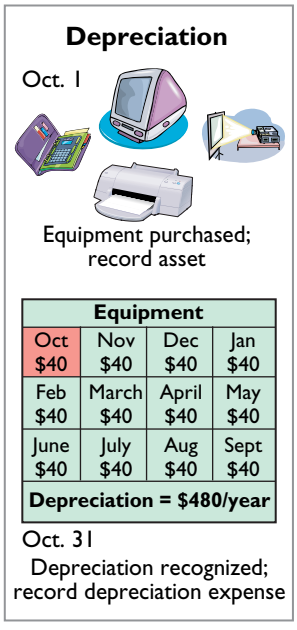


**ILLUSTRATION 3.7** **Adjustment for depreciation**

**Basic Analysis**

The expense Depreciation Expense is increased $40; the contra asset Accumulated Depreciation—Equipment is increased $40.

**Equation Analysis**

| Assets | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|
| Accumulated Depreciation—Equipment | | | | Depreciation Expense |
| –$40 | = | | | –$40 |

**Debit–Credit Analysis**

Debits increase expenses: debit Depreciation Expense $40.
Credits increase contra assets: credit Accumulated Depreciation—Equipment $40.

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 31 | Depreciation Expense | 711 | 40 | |
| | Accumulated Depreciation—Equipment | 158 | | 40 |
| | (To record monthly depreciation) | | | |

**Posting**

Equipment 157

| | | |
|---|---|---|
| Oct. 1 | 5,000 | |
| Oct. 31 | Bal. 5,000 | |

Accumulated Depreciation—Equipment 158

| | | |
|---|---|---|
| | Oct. 31 | Adj. 40 |
| | Oct. 31 | Bal. 40 |

Depreciation Expense 711

| | | |
|---|---|---|
| Oct. 31 | Adj. 40 | |
| Oct. 31 | Bal. 40 | |

**HELPFUL HINT**

**All contra accounts have increases, decreases, and normal balances opposite to the account to which they relate.**

The balance in the Accumulated Depreciation—Equipment account will increase $40 each month, and the balance in Equipment remains $5,000.

**Statement Presentation.** As indicated, Accumulated Depreciation—Equipment is a contra asset account. It is offset against Equipment on the balance sheet. The normal balance of a contra asset account is a credit. A theoretical alternative to using a contra asset account would be to decrease (credit) the asset account by the amount of depreciation each period. But using the contra account is preferable for a simple reason: It discloses **both** the original cost of the equipment **and** the total cost that has been expensed to date. Thus, in the balance sheet, Pioneer deducts Accumulated Depreciation—Equipment from the related asset account, as shown in **Illustration 3.8**.

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**ILLUSTRATION 3.8**
**Balance sheet presentation of accumulated depreciation**

| | |
|---|---|
| Equipment | $5,000 |
| Less: Accumulated depreciation—equipment | 40 |
| | **$4,960** |

**ALTERNATIVE TERMINOLOGY**
**Book value is also referred to as *carrying value*.**

**Book value** is the difference between the cost of any depreciable asset and its related accumulated depreciation (see **Alternative Terminology**). In Illustration 3.8, the book value of the equipment at the balance sheet date is $4,960. The book value and the fair value of the asset are generally two different values. As noted earlier, **the purpose of depreciation is not valuation but a means of cost allocation**.

Depreciation expense identifies the portion of an asset's cost that expired during the period (in this case, in October). The accounting equation shows that **without this adjusting entry, total assets, total owner's equity, and net income are overstated by $40 and depreciation expense is understated by $40**.

**Illustration 3.9** summarizes the accounting for prepaid expenses.

**ILLUSTRATION 3.9**
**Accounting for prepaid expenses**

**Accounting for Prepaid Expenses**

| Examples | Reason for Adjustment | Accounts Before Adjustment | Adjusting Entry |
|---|---|---|---|
| Insurance, supplies, advertising, rent, depreciation | Prepaid expenses originally recorded in asset accounts have been used. | Assets overstated. Expenses understated. | Dr. Expenses Cr. Assets or Contra Assets |

Unearned Revenues
Oct. 2
Thank you in advance for your work
I will finish by Dec. 31
$1,200
Cash is received in advance; liability is recorded
Oct. 31
Some service has been performed; some revenue is recorded

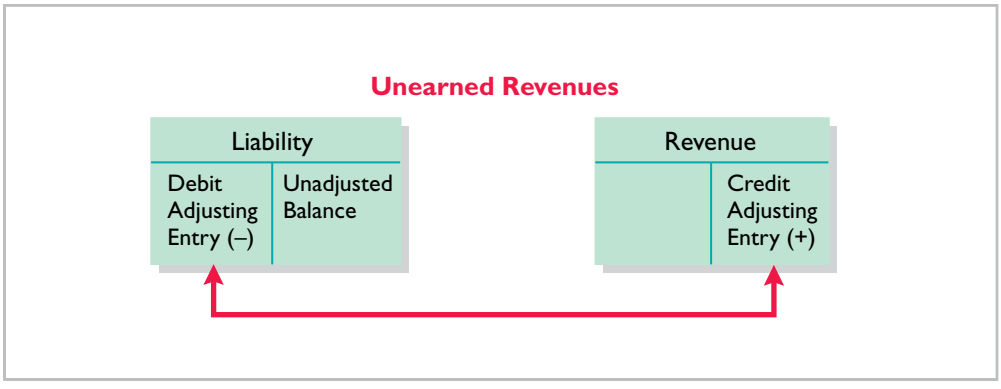
## Unearned Revenues

When companies receive cash before services are performed, they record a liability by increasing (crediting) a liability account called **unearned revenues**. In other words, a **company now has a performance obligation** (liability) to transfer a service to one of its customers. Items like rent, magazine subscriptions, and customer deposits for future service may result in unearned revenues. Airlines such as **United**, **Southwest**, and **Delta**, for instance, treat receipts from the sale of tickets as unearned revenue until the flight service is provided.

Unearned revenues are the opposite of prepaid expenses. Indeed, unearned revenue on the books of one company is likely to be a prepaid expense on the books of the company that has made the advance payment. For example, if identical accounting periods are assumed, a landlord will have unearned rent revenue when a tenant has prepaid rent.

When a company receives payment for services to be performed in a future accounting period, it increases (credits) an unearned revenue (a liability) account to recognize the liability that exists. The company subsequently recognizes revenues when it performs the service (see **Illustration 3.10**).

**ILLUSTRATION 3.10**
**Adjusting entries for unearned revenues**



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During the accounting period, it is not practical to make daily entries as the company performs services. Instead, the company delays recognition of revenue until the adjustment process. Then, the company makes an adjusting entry to record the revenue for services performed during the period and to show the liability that remains at the end of the accounting period. Typically, prior to adjustment, liabilities are overstated and revenues are understated. Therefore, **the adjusting entry for unearned revenues results in a decrease (a debit) to a liability account and an increase (a credit) to a revenue account**.

Pioneer Advertising received $1,200 on October 2 from R. Knox for advertising services expected to be completed by December 31. Pioneer credited the payment to Unearned Service Revenue. This liability account shows a balance of $1,200 in the October 31 trial balance. From an evaluation of the services Pioneer performed for Knox during October, the company determines that it should recognize $400 of revenue in October. The liability (Unearned Service Revenue) is therefore decreased, and owner's equity (Service Revenue) is increased.

As shown in **Illustration 3.11**, the liability Unearned Service Revenue now shows a balance of $800. That amount represents the remaining advertising services Pioneer is obligated to perform in the future. At the same time, Service Revenue shows total revenue recognized in October of $10,400. **Without this adjustment, revenues and net income are understated by $400 in the income statement. Moreover, liabilities will be overstated and owner's equity will be understated by $400 on the October 31 balance sheet.**

**ILLUSTRATION 3.11** **Service revenue accounts after adjustment**

**Basic Analysis**

The liability Unearned Service Revenue is decreased $400; the revenue Service Revenue is increased $400.

**Equation Analysis**

| Assets | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|
| | | Unearned Service Revenue −$400 | | Service Revenue +$400 |

**Debit–Credit Analysis**

Debits decrease liabilities: debit Unearned Service Revenue $400.
Credits increase revenues: credit Service Revenue $400.

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 31 | Unearned Service Revenue | 209 | 400 | |
| | Service Revenue | 400 | | 400 |
| | (To record revenue for services performed) | | | |

**Posting**

| Unearned Service Revenue | | | 209 |
|---|---|---|---|
| Oct. 31 Adj. 400 | Oct. 2 | | 1,200 |
| | Oct. 31 | Bal. | 800 |

| Service Revenue | | | 400 |
|---|---|---|---|
| | Oct. 31 | | 10,000 |
| | 31 | Adj. | 400 |
| | Oct. 31 | Bal. | 10,400 |

**Illustration 3.12** summarizes the accounting for unearned revenues.

**ILLUSTRATION 3.12**
**Accounting for unearned revenues**

## Accounting for Unearned Revenues

| Examples | Reason for Adjustment | Accounts Before Adjustment | Adjusting Entry |
|---|---|---|---|
| Rent, magazine subscriptions, customer deposits for future service | Unearned revenues recorded in liability accounts are now recognized as revenue for services performed. | Liabilities overstated. Revenues understated. | Dr. Liabilities<br>Cr. Revenues |

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## Accounting Across the Organization Best Buy

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### Turning Gift Cards into Revenue

Those of you who are marketing majors (and even most of you who are not) know that gift cards are among the hottest marketing tools in merchandising today. Customers purchase gift cards and give them to someone for later use. In a recent year, gift-card sales were expected to exceed $124 billion.

Although these programs are popular with marketing executives, they create accounting questions. Should revenue be recorded at the time the gift card is sold, or when it is exercised? How should expired gift cards be accounted for? In a recent balance sheet, **Best Buy** reported unearned revenue related to gift cards of $427 million.

**Source:** "2014 Gift Card Sales to Top $124 Billion, but Growth Slowing," *PR Newswire* (December 10, 2014).

**Suppose that Robert Jones purchases a $100 gift card at Best Buy on December 24, 2019, and gives it to his wife, Mary Jones, on December 25, 2019. On January 3, 2020, Mary uses the card to purchase $100 worth of CDs. When do you think Best Buy should recognize revenue and why? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 2 | Adjusting Entries for Deferrals

The ledger of Hammond Company, on March 31, 2020, includes these selected accounts before adjusting entries are prepared.

| | Debit | Credit |
|---|---|---|
| Prepaid Insurance | $ 3,600 | |
| Supplies | 2,800 | |
| Equipment | 25,000 | |
| Accumulated Depreciation—Equipment | | $5,000 |
| Unearned Service Revenue | | 9,200 |

An analysis of the accounts shows the following.

1. Insurance expires at the rate of $100 per month.
2. Supplies on hand total $800.
3. The equipment depreciates $200 a month.
4. During March, services were performed for $4,000 of the unearned service revenue reported.

Prepare the adjusting entries for the month of March.

**ACTION PLAN**

- Make adjusting entries at the end of the period for revenues recognized and expenses incurred in the period.
- Don't forget to make adjusting entries for deferrals. Failure to adjust for deferrals leads to overstatement of the asset or liability and understatement of the related expense or revenue.

### Solution

| | | | |
|---|---|---|---|
| **1.** | Insurance Expense | 100 | |
| | Prepaid Insurance | | 100 |
| | (To record insurance expired) | | |
| **2.** | Supplies Expense ($2,800 – $800) | 2,000 | |
| | Supplies | | 2,000 |
| | (To record supplies used) | | |
| **3.** | Depreciation Expense | 200 | |
| | Accumulated Depreciation—Equipment | | 200 |
| | (To record monthly depreciation) | | |
| **4.** | Unearned Service Revenue | 4,000 | |
| | Service Revenue | | 4,000 |
| | (To record revenue for services performed) | | |

Related exercise material: **BE3.2, BE3.3, BE3.4, BE3.5, BE3.6, and DO IT! 3.2.**

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# Adjusting Entries for Accruals

**LEARNING OBJECTIVE 3**

Prepare adjusting entries for accruals.

ANALYZE → JOURNALIZE → POST → TRIAL BALANCE → **Journalize and post adjusting entries: deferrals/accruals** → ADJUSTED TRIAL BALANCE → FINANCIAL STATEMENTS → CLOSING ENTRIES → POST-CLOSING TRIAL BALANCE

The second category of adjusting entries is **accruals**. Prior to an accrual adjustment, the revenue account (and the related asset account) or the expense account (and the related liability account) are understated. Thus, the adjusting entry for accruals will **increase both a balance sheet and an income statement account**.

## Accrued Revenues

Revenues for services performed but not yet recorded at the statement date are **accrued revenues**. Accrued revenues may accumulate (accrue) with the passing of time, as in the case of interest revenue. These are unrecorded because the earning of interest does not involve daily transactions. Companies do not record interest revenue on a daily basis because it is often impractical to do so. Accrued revenues also may result from services that have been performed but not yet billed nor collected, as in the case of commissions and fees. These may be unrecorded because only a portion of the total service has been performed and the clients will not be billed until the service has been completed.

An adjusting entry records the receivable that exists at the balance sheet date and the revenue for the services performed during the period. Prior to adjustment, both assets and revenues are understated. As shown in Illustration 3.13, **an adjusting entry for accrued revenues results in an increase (a debit) to an asset account and an increase (a credit) to a revenue account**.

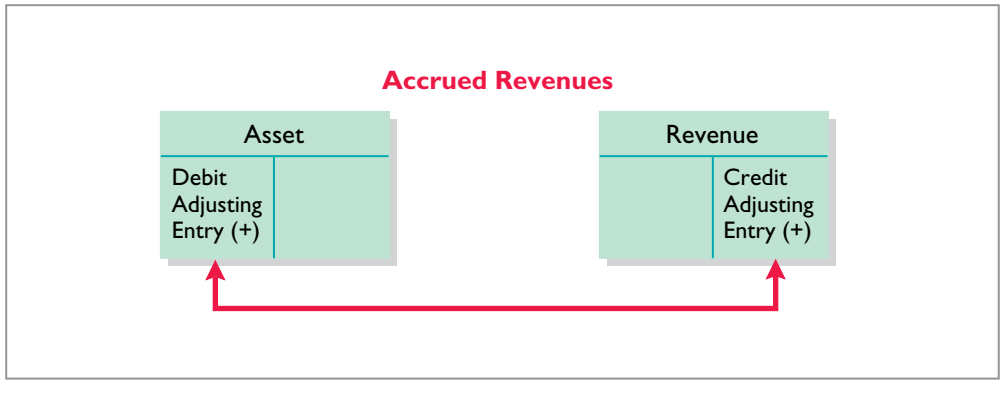
**Accrued Revenues**

Revenue and receivable are recorded for unbilled services

Nov. 10

Cash is received; receivable is reduced

**ILLUSTRATION 3.13** Adjusting entries for accrued revenues




In October, Pioneer Advertising performed services worth $200 that were not billed to clients on or before October 31. Because these services were not billed, they were not recorded. The accrual of unrecorded service revenue increases an asset account, Accounts Receivable. It also increases owner's equity by increasing a revenue account, Service Revenue, as shown in Illustration 3.14.

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**ILLUSTRATION 3.14** Adjustment for accrued revenue

**Basic Analysis**

The asset Accounts Receivable is increased $200; the revenue Service Revenue is increased $200.

**Equation Analysis**

| Assets | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|
| Accounts Receivable +$200 | | | | Service Revenue +$200 |

**Debit–Credit Analysis**

Debits increase assets: debit Accounts Receivable $200.
Credits increase revenues: credit Service Revenue $200.

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 31 | Accounts Receivable | 112 | 200 | |
| | Service Revenue | 400 | | 200 |
| | (To record revenue for services performed) | | | |

**Posting**

| Accounts Receivable 112 | | | | Service Revenue 400 | | | |
|---|---|---|---|---|---|---|---|
| Oct. 31 | Adj. 200 | | | | Oct. 31 | | 10,000 |
| | | | | | 31 | | 400 |
| | | | | | 31 | Adj. | 200 |
| Oct. 31 | Bal. 200 | | | | Oct. 31 | Bal. | 10,600 |

*Equation analyses summarize the effects of transactions on the three elements of the accounting equation, as well as the effect on cash flows.*

| A | = | L | + | OE |
|---|---|---|---|---|
| +200 | | | | |
| –200 | | | | |

**Cash Flows** +200

The asset Accounts Receivable shows that clients owe Pioneer $200 at the balance sheet date. The balance of $10,600 in Service Revenue represents the total revenue for services performed by Pioneer during the month ($10,000 + $400 + $200). **Without the adjusting entry, assets and owner's equity on the balance sheet and revenues and net income on the income statement are understated.**

On November 10, Pioneer receives cash of $200 for the services performed in October and makes the following entry.

| | | | |
|---|---|---|---|
| Nov. 10 | Cash | 200 | |
| | Accounts Receivable | | 200 |
| | (To record cash collected on account) | | |

The company records the collection of the receivables by a debit (increase) to Cash and a credit (decrease) to Accounts Receivable.

Illustration 3.15 summarizes the accounting for accrued revenues.

**ILLUSTRATION 3.15** Accounting for accrued revenues

**Accounting for Accrued Revenues**

| Examples | Reason for Adjustment | Accounts Before Adjustment | Adjusting Entry |
|---|---|---|---|
| Interest, rent, services | Services performed but not yet received in cash or recorded. | Assets understated. Revenues understated. | Dr. Assets<br>Cr. Revenues |

**ETHICS NOTE**

**A report released by Fannie Mae's board of directors stated that improper adjusting entries at the mortgage-finance company resulted in delayed recognition of expenses caused by interest rate changes. The motivation for such accounting apparently was the desire to hit earnings estimates.**

## Accrued Expenses

Expenses incurred but not yet paid or recorded at the statement date are called **accrued expenses**. Interest, taxes, and salaries are common examples of accrued expenses.

Companies make adjustments for accrued expenses to record the obligations that exist at the balance sheet date and to recognize the expenses that apply to the current accounting period (see Ethics Note). Prior to adjustment, both liabilities and expenses are understated. Therefore, as Illustration 3.16 shows, **an adjusting entry for accrued expenses results in an increase (a debit) to an expense account and an increase (a credit) to a liability account**.

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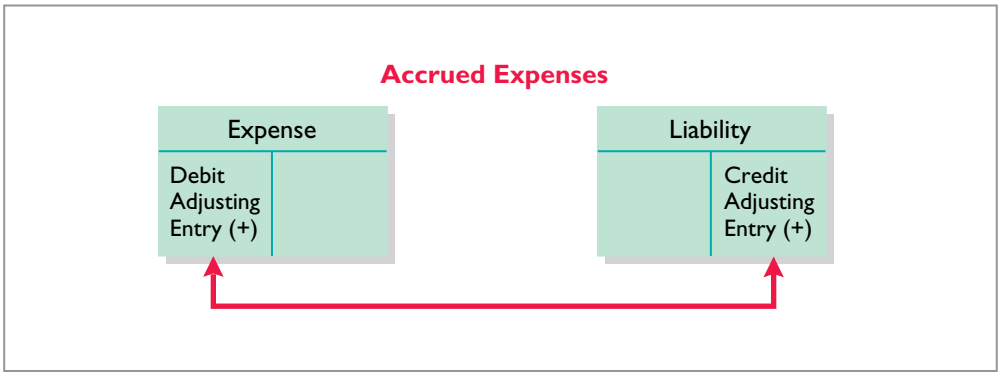


**ILLUSTRATION 3.16** Adjusting entries for accrued expenses

Let's look in more detail at some specific types of accrued expenses, beginning with accrued interest.

## Accrued Interest

Pioneer Advertising signed a three-month note payable in the amount of $5,000 on October 1. The note requires Pioneer to pay interest at an annual rate of 12%.

The amount of the interest recorded is determined by three factors: (1) the face value of the note; (2) the interest rate, which is always expressed as an annual rate; and (3) the length of time the note is outstanding. For Pioneer, the total interest due on the $5,000 note at its maturity date three months in the future is $150 ($5,000 × 12% × $\frac{3}{12}$), or $50 for one month. **Illustration 3.17** shows the formula for computing interest and its application to Pioneer for the month of October (see **Helpful Hint**).

**HELPFUL HINT**
In computing interest, we express the time period as a fraction of a year.

| Face Value of Note | × | Annual Interest Rate | × | Time in Terms of One Year | = | Interest |
|---|---|---|---|---|---|---|
| $5,000 | × | 12% | × | $\frac{1}{12}$ | = | $50 |

**ILLUSTRATION 3.17** Formula for computing interest

As **Illustration 3.18** shows, the accrual of interest at October 31 increases a liability account, Interest Payable. It also decreases owner's equity by increasing an expense account, Interest Expense.

**ILLUSTRATION 3.18** Adjustment for accrued interest

**Basic Analysis**

The expense Interest Expense is increased $50; the liability Interest Payable is increased $50.

**Equation Analysis**

| Assets | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|
| | | Interest Payable | | Interest Expense |
| | | +$50 | | −$50 |

**Debit–Credit Analysis**

Debits increase expenses: debit Interest Expense $50.
Credits increase liabilities: credit Interest Payable $50.

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 31 | Interest Expense | 905 | 50 | |
| | Interest Payable | 230 | | 50 |
| | (To record interest on notes payable) | | | |

**Posting**

| Interest Expense | | | 905 |
|---|---|---|---|
| Oct. 31 | Adj. 50 | | |
| Oct. 31 | Bal. 50 | | |

| Interest Payable | | | 230 |
|---|---|---|---|
| | | Oct. 31 | Adj. 50 |
| | | Oct. 31 | Bal. 50 |

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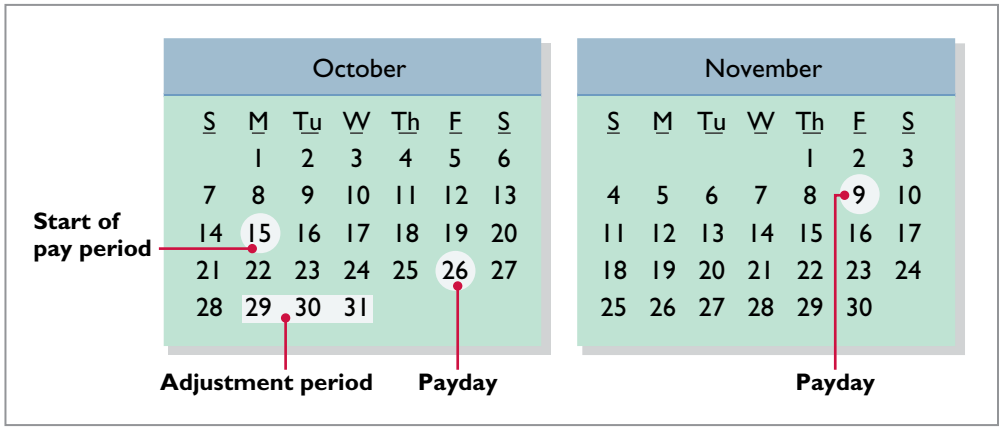
Interest Expense shows the interest charges for the month of October. Interest Payable shows the amount of interest the company owes at the statement date. Pioneer will not pay the interest until the note comes due at the end of three months. Companies use the Interest Payable account, instead of crediting Notes Payable, to disclose the two different types of obligations—interest and principal—in the accounts and statements. **Without this adjusting entry, liabilities and interest expense are understated, and net income and owner's equity are overstated.**

## Accrued Salaries and Wages

Companies pay for some types of expenses, such as employee salaries and wages, after the services have been performed. Pioneer Advertising paid salaries and wages on October 26 for its employees' first two weeks of work. The next payment of salaries will not occur until November 9. As Illustration 3.19 shows, three working days remain in October (October 29–31).

**ILLUSTRATION 3.19**
**Calendar showing Pioneer's pay periods**




At October 31, the salaries and wages for these three days represent an accrued expense and a related liability to Pioneer. The employees receive total salaries and wages of $2,000 for a five-day work week, or $400 per day. Thus, accrued salaries and wages at October 31 are $1,200 ($400 × 3). This accrual increases a liability, Salaries and Wages Payable. It also decreases owner's equity by increasing an expense account, Salaries and Wages Expense, as shown in Illustration 3.20.

**ILLUSTRATION 3.20** **Adjustment for accrued salaries and wages**

**Basic Analysis**

The expense Salaries and Wages Expense is increased $1,200; the liability Salaries and Wages Payable is increased $1,200.

**Equation Analysis**

| Assets | = | Liabilities | + | Owner's Equity |
|---|---|---|---|---|
| | | Salaries and Wages Payable | | Salaries and Wages Expense |
| | | +$1,200 | | −$1,200 |

**Debit–Credit Analysis**

Debits increase expenses: debit Salaries and Wages Expense $1,200.
Credits increase liabilities: credit Salaries and Wages Payable $1,200.

**Journal Entry**

| | | | | |
|---|---|---|---|---|
| Oct. 31 | Salaries and Wages Expense | 726 | 1,200 | |
| | Salaries and Wages Payable | 212 | | 1,200 |
| | (To record accrued salaries and wages) | | | |

**Posting**

| Salaries and Wages Expense 726 | | | |
|---|---|---|---|
| Oct. 26 | | 4,000 | |
| 31 | Adj. | 1,200 | |
| Oct. 31 | Bal. | 5,200 | |

| Salaries and Wages Payable 212 | | |
|---|---|---|
| | Oct. 31 | Adj. 1,200 |
| | Oct. 31 | Bal. 1,200 |

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After this adjustment, the balance in Salaries and Wages Expense of $5,200 (13 days × $400) is the actual salary and wages expense for October. The balance in Salaries and Wages Payable of $1,200 is the amount of the liability for salaries and wages Pioneer owes as of October 31. **Without the $1,200 adjustment for salaries and wages, Pioneer's expenses are understated $1,200 and its liabilities are understated $1,200.**

Pioneer pays salaries and wages every two weeks. Consequently, the next payday is November 9, when the company will again pay total salaries and wages of $4,000. The payment consists of $1,200 of salaries and wages payable at October 31 plus $2,800 of salaries and wages expense for November (7 working days, as shown in the November calendar × $400). Therefore, Pioneer makes the following entry on November 9.

| | | | |
|---|---|---|---|
| Nov. 9 | Salaries and Wages Payable | 1,200 | |
| | Salaries and Wages Expense | 2,800 | |
| | Cash | | 4,000 |
| | (To record November 9 payroll) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | –1,200 | | |
| | | | | –2,800 |
| –4,000 | | | | |

**Cash Flows**
–4,000

This entry eliminates the liability for Salaries and Wages Payable that Pioneer recorded in the October 31 adjusting entry, and it records the proper amount of Salaries and Wages Expense for the period between November 1 and November 9.

**Illustration 3.21** summarizes the accounting for accrued expenses.

**Accounting for Accrued Expenses**

| Examples | Reason for Adjustment | Accounts Before Adjustment | Adjusting Entry |
|---|---|---|---|
| Interest, rent, salaries | Expenses have been incurred but not yet paid in cash or recorded. | Expenses understated. Liabilities understated. | Dr. Expenses<br>Cr. Liabilities |

**ILLUSTRATION 3.21**
**Accounting for accrued expenses**

## People, Planet, and Profit Insight

© Nathan Gleave/iStockphoto

### Got Junk?

Do you have an old computer or two that you no longer use? How about an old TV that needs replacing? Many people do. Approximately 163,000 computers and televisions become obsolete each day. Yet, in a recent year, only 11% of computers were recycled. It is estimated that 75% of all computers ever sold are sitting in storage somewhere, waiting to be disposed of. Each of these old TVs and computers is loaded with lead, cadmium, mercury, and other toxic chemicals. If you have one of these electronic gadgets, you have a responsibility, and a probable cost, for disposing of it. Companies have the same problem, but their discarded materials may include lead paint, asbestos, and other toxic chemicals.

**What accounting issue might this cause for companies? (Go to WileyPLUS for this answer and additional questions.)**

# Summary of Basic Relationships

**Illustration 3.22** summarizes the four basic types of adjusting entries. Take some time to study and analyze the adjusting entries. Be sure to note that **each adjusting entry affects one balance sheet account and one income statement account**.

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**ILLUSTRATION 3.22**
**Summary of adjusting entries**

| Type of Adjustment | Accounts Before Adjustment | Adjusting Entry |
|---|---|---|
| Prepaid expenses | Assets overstated.<br>Expenses understated. | Dr. Expenses<br>Cr. Assets or Contra Assets |
| Unearned revenues | Liabilities overstated.<br>Revenues understated. | Dr. Liabilities<br>Cr. Revenues |
| Accrued revenues | Assets understated.<br>Revenues understated. | Dr. Assets<br>Cr. Revenues |
| Accrued expenses | Expenses understated.<br>Liabilities understated. | Dr. Expenses<br>Cr. Liabilities |

Illustrations 3.23 and 3.24 show the journalizing and posting of adjusting entries for Pioneer Advertising on October 31. The ledger identifies all adjustments by the reference J2 because they have been recorded on page 2 of the general journal. The company may insert a center caption "Adjusting Entries" between the last transaction entry and the first adjusting entry in the journal. When you review the general ledger in Illustration 3.24, note that the entries highlighted in red are the adjustments.

**ILLUSTRATION 3.23**
**General journal showing adjusting entries**

**GENERAL JOURNAL** J2

| Date | Account Titles and Explanation | Ref. | Debit | Credit |
|---|---|---|---|---|
| 2020 | Adjusting Entries | | | |
| Oct. 31 | Supplies Expense | 631 | 1,500 | |
| | Supplies | 126 | | 1,500 |
| | (To record supplies used) | | | |
| 31 | Insurance Expense | 722 | 50 | |
| | Prepaid Insurance | 130 | | 50 |
| | (To record insurance expired) | | | |
| 31 | Depreciation Expense | 711 | 40 | |
| | Accumulated Depreciation—Equipment | 158 | | 40 |
| | (To record monthly depreciation) | | | |
| 31 | Unearned Service Revenue | 209 | 400 | |
| | Service Revenue | 400 | | 400 |
| | (To record revenue for services performed) | | | |
| 31 | Accounts Receivable | 112 | 200 | |
| | Service Revenue | 400 | | 200 |
| | (To record revenue for services performed) | | | |
| 31 | Interest Expense | 905 | 50 | |
| | Interest Payable | 230 | | 50 |
| | (To record interest on notes payable) | | | |
| 31 | Salaries and Wages Expense | 726 | 1,200 | |
| | Salaries and Wages Payable | 212 | | 1,200 |
| | (To record accrued salaries and wages) | | | |

**(1) Adjusting entries should not involve debits or credits to Cash.**
**(2) Evaluate whether the adjustment makes sense. For example, an adjustment to recognize supplies used should increase Supplies Expense.**
**(3) Double-check all computations.**
**(4) Each adjusting entry affects one balance sheet account and one income statement account.**

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**ILLUSTRATION 3.24** General ledger after adjustment

## GENERAL LEDGER

**Cash** — No. 101

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | 10,000 | | 10,000 |
| 2 | | J1 | 1,200 | | 11,200 |
| 3 | | J1 | | 900 | 10,300 |
| 4 | | J1 | | 600 | 9,700 |
| 20 | | J1 | | 500 | 9,200 |
| 26 | | J1 | | 4,000 | 5,200 |
| 31 | | J1 | 10,000 | | 15,200 |

**Accounts Receivable** — No. 112

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| **Oct. 31** | **Adj. entry** | **J2** | **200** | | **200** |

**Supplies** — No. 126

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 5 | | J1 | 2,500 | | 2,500 |
| **31** | **Adj. entry** | **J2** | | **1,500** | **1,000** |

**Prepaid Insurance** — No. 130

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 4 | | J1 | 600 | | 600 |
| **31** | **Adj. entry** | **J2** | | **50** | **550** |

**Equipment** — No. 157

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | 5,000 | | 5,000 |

**Accumulated Depreciation—Equipment** — No. 158

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| **Oct. 31** | **Adj. entry** | **J2** | | **40** | **40** |

**Notes Payable** — No. 200

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | | 5,000 | 5,000 |

**Accounts Payable** — No. 201

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 5 | | J1 | | 2,500 | 2,500 |

**Unearned Service Revenue** — No. 209

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 2 | | J1 | | 1,200 | 1,200 |
| **31** | **Adj. entry** | **J2** | **400** | | **800** |

**Salaries and Wages Payable** — No. 212

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| **Oct. 31** | **Adj. entry** | **J2** | | **1,200** | **1,200** |

**Interest Payable** — No. 230

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| **Oct. 31** | **Adj. entry** | **J2** | | **50** | **50** |

**Owner's Capital** — No. 301

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | | 10,000 | 10,000 |

**Owner's Drawings** — No. 306

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 20 | | J1 | 500 | | 500 |

**Service Revenue** — No. 400

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | | J1 | | 10,000 | 10,000 |
| **31** | **Adj. entry** | **J2** | | **400** | **10,400** |
| **31** | **Adj. entry** | **J2** | | **200** | **10,600** |

**Supplies Expense** — No. 631

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| **Oct. 31** | **Adj. entry** | **J2** | **1,500** | | **1,500** |

**Depreciation Expense** — No. 711

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| **Oct. 31** | **Adj. entry** | **J2** | **40** | | **40** |

**Insurance Expense** — No. 722

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| **Oct. 31** | **Adj. entry** | **J2** | **50** | | **50** |

**Salaries and Wages Expense** — No. 726

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 26 | | J1 | 4,000 | | 4,000 |
| **31** | **Adj. entry** | **J2** | **1,200** | | **5,200** |

**Rent Expense** — No. 729

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 3 | | J1 | 900 | | 900 |

**Interest Expense** — No. 905

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| **Oct. 31** | **Adj. entry** | **J2** | **50** | | **50** |

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## DO IT! 3 | Adjusting Entries for Accruals

Micro Computer Services began operations on August 1, 2020. At the end of August 2020, management prepares monthly financial statements. The following information relates to August.

1. At August 31, the company owed its employees $800 in salaries and wages that will be paid on September 1.
2. On August 1, the company borrowed $30,000 from a local bank on a 15-year mortgage. The annual interest rate is 10%.
3. Revenue for services performed but unrecorded for August totaled $1,100.

Prepare the adjusting entries needed at August 31, 2020.

**ACTION PLAN**

- Make adjusting entries at the end of the period to recognize revenues for services performed and for expenses incurred.
- Don't forget to make adjusting entries for accruals. Adjusting entries for accruals will increase both a balance sheet and an income statement account.

### Solution

| | | | |
|---|---|---|---|
| **1.** | Salaries and Wages Expense | 800 | |
| | Salaries and Wages Payable | | 800 |
| | (To record accrued salaries) | | |
| **2.** | Interest Expense | 250 | |
| | Interest Payable | | 250 |
| | (To record accrued interest: $\$30{,}000 \times 10\% \times \frac{1}{12} = \$250$) | | |
| **3.** | Accounts Receivable | 1,100 | |
| | Service Revenue | | 1,100 |
| | (To record revenue for services performed) | | |

Related exercise material: **BE3.7, DO IT! 3.3, E3.5, E3.6, E3.7, E3.8 and E3.9.**

# Adjusted Trial Balance and Financial Statements

**LEARNING OBJECTIVE 4**

Describe the nature and purpose of an adjusted trial balance.

ANALYZE → JOURNALIZE → POST → TRIAL BALANCE → ADJUSTING ENTRIES → **Adjusted trial balance** → **Prepare financial statements** → JOURNALIZE AND POST CLOSING ENTRIES → PREPARE A POST-CLOSING TRIAL BALANCE

After a company has journalized and posted all adjusting entries, it prepares another trial balance from the ledger accounts. This trial balance is called an **adjusted trial balance**. It shows the balances of all accounts, including those adjusted, at the end of the accounting period. The purpose of an adjusted trial balance is to **prove the equality** of the total debit balances and the total credit balances in the ledger after all adjustments. Because the accounts contain all data needed for financial statements, the adjusted trial balance is the **primary basis for the preparation of financial statements**.

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## Preparing the Adjusted Trial Balance

**Illustration 3.25** presents the adjusted trial balance for Pioneer Advertising prepared from the ledger accounts in Illustration 3.24. The amounts affected by the adjusting entries are highlighted in red. Compare these amounts to those in the unadjusted trial balance in Illustration 3.3. In this comparison, you will see that there are more accounts in the adjusted trial balance as a result of the adjusting entries made at the end of the month.

**ILLUSTRATION 3.25**
**Adjusted trial balance**

**Pioneer Advertising**
**Adjusted Trial Balance**
**October 31, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $15,200 | |
| Accounts Receivable | 200 | |
| Supplies | 1,000 | |
| Prepaid Insurance | 550 | |
| Equipment | 5,000 | |
| Accumulated Depreciation—Equipment | | $ 40 |
| Notes Payable | | 5,000 |
| Accounts Payable | | 2,500 |
| Interest Payable | | 50 |
| Unearned Service Revenue | | 800 |
| Salaries and Wages Payable | | 1,200 |
| Owner's Capital | | 10,000 |
| Owner's Drawings | 500 | |
| Service Revenue | | 10,600 |
| Salaries and Wages Expense | 5,200 | |
| Supplies Expense | 1,500 | |
| Rent Expense | 900 | |
| Insurance Expense | 50 | |
| Interest Expense | 50 | |
| Depreciation Expense | 40 | |
| | $30,190 | $30,190 |

## Preparing Financial Statements

**Companies can prepare financial statements directly from the adjusted trial balance.** **Illustrations 3.26** and **3.27** present the interrelationships of data in the adjusted trial balance and the financial statements.

As Illustration 3.26 shows, companies prepare the income statement from the revenue and expense accounts. Next, they use the owner's capital and drawings accounts and the net income (or net loss) from the income statement to prepare the owner's equity statement.

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**ILLUSTRATION 3.26** **Preparation of the income statement and owner's equity statement from the adjusted trial balance**

**Pioneer Advertising**
**Adjusted Trial Balance**
**October 31, 2020**

| Account | Debit | Credit |
|---|---|---|
| Cash | $15,200 | |
| Accounts Receivable | 200 | |
| Supplies | 1,000 | |
| Prepaid Insurance | 550 | |
| Equipment | 5,000 | |
| Accumulated Depreciation—Equipment | | $ 40 |
| Notes Payable | | 5,000 |
| Accounts Payable | | 2,500 |
| Unearned Service Revenue | | 800 |
| Salaries and Wages Payable | | 1,200 |
| Interest Payable | | 50 |
| Owner's Capital | | 10,000 |
| Owner's Drawings | 500 | |
| Service Revenue | | 10,600 |
| Salaries and Wages Expense | 5,200 | |
| Supplies Expense | 1,500 | |
| Rent Expense | 900 | |
| Insurance Expense | 50 | |
| Interest Expense | 50 | |
| Depreciation Expense | 40 | |
| | $30,190 | $30,190 |

**Pioneer Advertising**
**Income Statement**
**For the Month Ended October 31, 2020**

| | | |
|---|---|---|
| Revenues | | |
| Service revenue | | $10,600 |
| Expenses | | |
| Salaries and wages expense | $5,200 | |
| Supplies expense | 1,500 | |
| Rent expense | 900 | |
| Insurance expense | 50 | |
| Interest expense | 50 | |
| Depreciation expense | 40 | |
| Total expenses | | 7,740 |
| Net income | | $ 2,860 |

**Pioneer Advertising**
**Owner's Equity Statement**
**For the Month Ended October 31, 2020**

| | |
|---|---|
| Owner's capital, October 1 | $ –0– |
| Add: Investments | 10,000 |
| | 10,000 |
| Net income | 2,860 |
| | 12,860 |
| Owner's drawings | 500 |
| Owner's capital, October 31 | $12,360 |

To balance sheet

As Illustration 3.27 shows, companies then prepare the balance sheet from the asset and liability accounts and the ending owner's capital balance as reported in the owner's equity statement.

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**ILLUSTRATION 3.27** **Preparation of the balance sheet from the adjusted trial balance**

**Pioneer Advertising**
**Adjusted Trial Balance**
**October 31, 2020**

| Account | Debit | Credit |
|---|---|---|
| Cash | $15,200 | |
| Accounts Receivable | 200 | |
| Supplies | 1,000 | |
| Prepaid Insurance | 550 | |
| Equipment | 5,000 | |
| Accumulated Depreciation—Equipment | | $ 40 |
| Notes Payable | | 5,000 |
| Accounts Payable | | 2,500 |
| Unearned Service Revenue | | 800 |
| Salaries and Wages Payable | | 1,200 |
| Interest Payable | | 50 |
| Owner's Capital | | 10,000 |
| Owner's Drawings | 500 | |
| Service Revenue | | 10,600 |
| Salaries and Wages Expense | 5,200 | |
| Supplies Expense | 1,500 | |
| Rent Expense | 900 | |
| Insurance Expense | 50 | |
| Interest Expense | 50 | |
| Depreciation Expense | 40 | |
| | $30,190 | $30,190 |

**Pioneer Advertising**
**Balance Sheet**
**October 31, 2020**

**Assets**

| | | |
|---|---|---|
| Cash | | $15,200 |
| Accounts receivable | | 200 |
| Supplies | | 1,000 |
| Prepaid insurance | | 550 |
| Equipment | $5,000 | |
| Less: Accumulated depreciation—equip. | 40 | 4,960 |
| Total assets | | $21,910 |

**Liabilities and Owner's Equity**

| | |
|---|---|
| Liabilities | |
| Notes payable | $ 5,000 |
| Accounts payable | 2,500 |
| Unearned service revenue | 800 |
| Salaries and wages payable | 1,200 |
| Interest payable | 50 |
| Total liabilities | 9,550 |
| Owner's equity | |
| Owner's capital | 12,360 |
| Total liabilities and owner's equity | $21,910 |

Capital balance at Oct. 31 from owner's equity statement in Illustration 3.26

## DO IT! 4 | Trial Balance

Skolnick Co. was organized on April 1, 2020. The company prepares quarterly financial statements. The adjusted trial balance amounts at June 30 are shown below.

| | Debit | | Credit |
|---|---|---|---|
| Cash | $ 6,700 | Accumulated Depreciation—Equipment | $ 850 |
| Accounts Receivable | 600 | Notes Payable | 5,000 |
| Prepaid Rent | 900 | Accounts Payable | 1,510 |
| Supplies | 1,000 | Salaries and Wages Payable | 400 |
| Equipment | 15,000 | Interest Payable | 50 |
| Owner's Drawings | 600 | Unearned Rent Revenue | 500 |
| Salaries and Wages Expense | 9,400 | Owner's Capital | 14,000 |
| Rent Expense | 1,500 | Service Revenue | 14,200 |
| Depreciation Expense | 850 | Rent Revenue | 800 |
| Supplies Expense | 200 | | |
| Utilities Expense | 510 | | |
| Interest Expense | 50 | | |
| | $37,310 | | $37,310 |

**a.** Determine the net income for the quarter April 1 to June 30.

**b.** Determine the total assets and total liabilities at June 30, 2020, for Skolnick Co.

**c.** Determine the amount of owner's capital at June 30, 2020.

**ACTION PLAN**

- In an adjusted trial balance, all asset, liability, revenue, and expense accounts are properly stated.
- To determine the ending balance in Owner's Capital, add net income and subtract dividends.

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**Solution**

**a.** The net income is determined by adding revenues and subtracting expenses. The net income is computed as follows.

| | | |
|---|---|---|
| Revenues | | |
| Service revenue | $14,200 | |
| Rent revenue | 800 | |
| Total revenues | | $15,000 |
| Expenses | | |
| Salaries and wages expense | 9,400 | |
| Rent expense | 1,500 | |
| Depreciation expense | 850 | |
| Utilities expense | 510 | |
| Supplies expense | 200 | |
| Interest expense | 50 | |
| Total expenses | | 12,510 |
| Net income | | $ 2,490 |

**b.** Total assets and liabilities are computed as follows.

| Assets | | | Liabilities | |
|---|---|---|---|---|
| Cash | | $ 6,700 | Notes payable | $5,000 |
| Accounts receivable | | 600 | Accounts payable | 1,510 |
| Supplies | | 1,000 | Unearned rent revenue | 500 |
| Prepaid rent | | 900 | Salaries and wages payable | 400 |
| Equipment | $15,000 | | Interest payable | 50 |
| Less: Accumulated depreciation—equipment | 850 | 14,150 | | |
| Total assets | | $23,350 | Total liabilities | $7,460 |

| | |
|---|---|
| **c.** Owner's capital, April 1 | $ 0 |
| Add: Investments | 14,000 |
| Net income | 2,490 |
| Less: Owner's drawings | 600 |
| Owner's capital, June 30 | $15,890 |

Related exercise material: **BE3.9, BE3.10, DO IT! 3.4, and E3.11.**

# Appendix 3A Alternative Treatment of Deferrals

**LEARNING OBJECTIVE *5**

Prepare adjusting entries for the alternative treatment of deferrals.

In discussing adjusting entries for prepaid expenses and unearned revenues, we illustrated transactions for which companies made the initial entries to balance sheet accounts. In the case of prepaid expenses, the company debited the prepayment to an asset account. In the case of unearned revenue, the company credited a liability account to record the cash received.

Some companies use an alternative treatment. (1) When a company prepays an expense, it debits that amount to an expense account. (2) When it receives payment for future services, it credits the amount to a revenue account. In this appendix, we describe the circumstances

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that justify such entries and the different adjusting entries that may be required. This alternative treatment of prepaid expenses and unearned revenues has the same effect on the financial statements as the procedures described in the chapter.

## Prepaid Expenses

Prepaid expenses become expired costs either through the passage of time (e.g., insurance) or through consumption (e.g., advertising supplies). If at the time of purchase the company expects to consume the supplies before the next financial statement date, **it may choose to debit (increase) an expense account rather than an asset account. This alternative treatment is simply more convenient.**

Assume that Pioneer Advertising expects that it will use before the end of the month all of the supplies purchased on October 5. A debit of $2,500 to Supplies Expense (rather than to the asset account Supplies) on October 5 will eliminate the need for an adjusting entry on October 31. At October 31, the Supplies Expense account will show a balance of $2,500, which is the cost of supplies used between October 5 and October 31.

But what if the company does not use all the supplies? For example, what if an inventory of $1,000 of advertising supplies remains on October 31? Obviously, the company would need to make an adjusting entry. Prior to adjustment, the expense account Supplies Expense is overstated $1,000, and the asset account Supplies is understated $1,000. Thus, Pioneer makes the following adjusting entry.

| | | | |
|---|---|---|---|
| Oct. 31 | Supplies | 1,000 | |
| | Supplies Expense | | 1,000 |
| | (To record supplies inventory) | | |

A = L + OE
+1,000
+1,000 Exp

**Cash Flows**
no effect

**Illustration 3A.1** shows the accounts after the company posts the adjusting entry.

**Supplies**

| | | | | | |
|---|---|---|---|---|---|
| 10/31 | Adj. | 1,000 | | | |

**Supplies Expense**

| | | | | | |
|---|---|---|---|---|---|
| 10/5 | | 2,500 | 10/31 | Adj. | 1,000 |
| 10/31 | Bal. | 1,500 | | | |

**ILLUSTRATION 3A.1**
**Prepaid expenses accounts after adjustment**

After adjustment, the asset account Supplies shows a balance of $1,000, which is equal to the cost of supplies on hand at October 31. In addition, Supplies Expense shows a balance of $1,500. This is equal to the cost of supplies used between October 5 and October 31. Without the adjusting entry, expenses are overstated and net income is understated by $1,000 in the October income statement. Also, both assets and owner's equity are understated by $1,000 on the October 31 balance sheet.

**Illustration 3A.2** compares the entries and accounts for advertising supplies in the two adjustment approaches.

| Prepayment Initially Debited to Asset Account (per chapter) | | | | Prepayment Initially Debited to Expense Account (per appendix) | | | |
|---|---|---|---|---|---|---|---|
| Oct. 5 | Supplies | 2,500 | | Oct. 5 | Supplies Expense | 2,500 | |
| | Accounts Payable | | 2,500 | | Accounts Payable | | 2,500 |
| Oct. 31 | Supplies Expense | 1,500 | | Oct. 31 | Supplies | 1,000 | |
| | Supplies | | 1,500 | | Supplies Expense | | 1,000 |

**ILLUSTRATION 3A.2**
**Adjustment approaches—a comparison**

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After Pioneer posts the entries, the accounts appear as shown in Illustration 3A.3.

**ILLUSTRATION 3A.3**
**Comparison of accounts**

**(per chapter)**

**Supplies**

| | | | | | |
|---|---|---|---|---|---|
| 10/5 | | 2,500 | 10/31 | Adj. | 1,500 |
| 10/31 | Bal. | 1,000 | | | |

**Supplies Expense**

| | | | | | |
|---|---|---|---|---|---|
| 10/31 | Adj. | 1,500 | | | |

**(per appendix)**

**Supplies**

| | | | | | |
|---|---|---|---|---|---|
| 10/31 | Adj. | 1,000 | | | |

**Supplies Expense**

| | | | | | |
|---|---|---|---|---|---|
| 10/5 | | 2,500 | 10/31 | Adj. | 1,000 |
| 10/31 | Bal. | 1,500 | | | |

Note that the account balances under each alternative are the same at October 31: Supplies $1,000 and Supplies Expense $1,500.

## Unearned Revenues

Unearned revenues are recognized as revenue at the time services are performed. Similar to the case for prepaid expenses, companies may credit (increase) a revenue account when they receive cash for future services.

To illustrate, assume that Pioneer Advertising received $1,200 for future services on October 2. Pioneer expects to perform the services before October 31.[1] In such a case, the company credits Service Revenue. If Pioneer in fact performs the service before October 31, no adjustment is needed.

**HELPFUL HINT**
The required adjusted balances here are Service Revenue $400 and Unearned Service Revenue $800.

However, if at the statement date Pioneer has not performed $800 of the services, it would make an adjusting entry (see Helpful Hint). Without the entry, the revenue account Service Revenue is overstated $800, and the liability account Unearned Service Revenue is understated $800. Thus, Pioneer makes the following adjusting entry.

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | –800 Rev |
| +800 | | | | |

**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| Oct. 31 | Service Revenue | 800 | |
| | Unearned Service Revenue | | 800 |
| | (To record unearned service revenue) | | |

Illustration 3A.4 shows the accounts after Pioneer posts the adjusting entry.

**ILLUSTRATION 3A.4**
**Unearned service revenue accounts after adjustment**

**Unearned Service Revenue**

| | | | | | |
|---|---|---|---|---|---|
| | | | 10/31 | Adj. | 800 |

**Service Revenue**

| | | | | | |
|---|---|---|---|---|---|
| 10/31 | Adj. | 800 | 10/2 | | 1,200 |
| | | | 10/31 | Bal. | 400 |

The liability account Unearned Service Revenue shows a balance of $800. This equals the services that will be performed in the future. In addition, the balance in Service Revenue equals the services performed in October. Without the adjusting entry, both revenues and net income are overstated by $800 in the October income statement. Also, liabilities are understated by $800 and owner's equity is overstated by $800 on the October 31 balance sheet.

[1]This example focuses only on the alternative treatment of unearned revenues. For simplicity, we have ignored the entries to Service Revenue pertaining to the immediate recognition of revenue ($10,000) and the adjusting entry for accrued revenue ($200).

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**Illustration 3A.5** compares the entries and accounts for initially recording unearned service revenue in (1) a liability account or (2) a revenue account.

**ILLUSTRATION 3A.5** **Adjustment approaches—a comparison**

| Unearned Service Revenue Initially Credited to Liability Account (per chapter) | | | | Unearned Service Revenue Initially Credited to Revenue Account (per appendix) | | | |
|---|---|---|---|---|---|---|---|
| Oct. 2 | Cash | 1,200 | | Oct. 2 | Cash | 1,200 | |
| | Unearned Service Revenue | | 1,200 | | Service Revenue | | 1,200 |
| Oct. 31 | Unearned Service Revenue | 400 | | Oct. 31 | Service Revenue | 800 | |
| | Service Revenue | | 400 | | Unearned Service Revenue | | 800 |

After Pioneer posts the entries, the accounts appear as shown in **Illustration 3A.6**.

**ILLUSTRATION 3A.6** **Comparison of accounts**

| (per chapter) Unearned Service Revenue | | | | | (per appendix) Unearned Service Revenue | | | |
|---|---|---|---|---|---|---|---|---|
| 10/31 | Adj. | 400 | 10/2 | 1,200 | | | 10/31 Adj. | 800 |
| | | | 10/31 Bal. | 800 | | | | |
| **Service Revenue** | | | | | **Service Revenue** | | | |
| | | | 10/31 Adj. | 400 | 10/31 Adj. | 800 | 10/2 | 1,200 |
| | | | | | | | 10/31 Bal. | 400 |

Note that the balances in the accounts are the same under the two alternatives: Unearned Service Revenue $800 and Service Revenue $400.

## Summary of Additional Adjustment Relationships

**Illustration 3A.7** provides a summary of basic relationships for deferrals.

**ILLUSTRATION 3A.7** **Summary of basic relationships for deferrals**

| Type of Adjustment | Reason for Adjustment | Account Balances before Adjustment | Adjusting Entry |
|---|---|---|---|
| 1. Prepaid expenses | (a) Prepaid expenses initially recorded in asset accounts have been used. | Assets overstated.<br>Expenses understated. | Dr. Expenses<br>Cr. Assets |
| | (b) **Prepaid expenses initially recorded in expense accounts have not been used.** | **Assets understated.**<br>**Expenses overstated.** | **Dr. Assets**<br>**Cr. Expenses** |
| 2. Unearned revenues | (a) Unearned revenues initially recorded in liability accounts are now recognized as revenue. | Liabilities overstated.<br>Revenues understated. | Dr. Liabilities<br>Cr. Revenues |
| | (b) **Unearned revenues initially recorded in revenue accounts are still unearned.** | **Liabilities understated.**<br>**Revenues overstated.** | **Dr. Revenues**<br>**Cr. Liabilities** |

Alternative adjusting entries **do not apply** to accrued revenues and accrued expenses because **no entries occur before companies make these types of adjusting entries**.

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Appendix 3B

# Financial Reporting Concepts

**LEARNING OBJECTIVE *6**

Discuss financial reporting concepts.

This appendix provides a summary of the concepts in action used in this textbook. In addition, it provides other useful concepts which accountants use as a basis for recording and reporting financial information.

## Qualities of Useful Information

Recently, the FASB completed the first phase of a project in which it developed a conceptual framework to serve as the basis for future accounting standards. The framework begins by stating that the primary objective of financial reporting is to provide financial information that is **useful** to investors and creditors for making decisions about providing capital. Useful information should possess two fundamental qualities, relevance and faithful representation, as shown in Illustration 3B.1.

**ILLUSTRATION 3B.1**
**Fundamental qualities of useful information**

**Relevance** Accounting information has **relevance** if it would make a difference in a business decision. Information is considered relevant if it provides information that has **predictive value**, that is, helps provide accurate expectations about the future, and has **confirmatory value**, that is, confirms or corrects prior expectations. **Materiality** is a company-specific aspect of relevance. An item is material when its **size** makes it likely to influence the decision of an investor or creditor.

**Faithful Representation** **Faithful representation** means that information accurately depicts what really happened. To provide a faithful representation, information must be **complete** (nothing important has been omitted), **neutral** (is not biased toward one position or another), and **free from error**.

### Enhancing Qualities

In addition to the two fundamental qualities, the FASB also describes a number of enhancing qualities of useful information. These include **comparability**, **verifiability**, **timeliness**, and **understandability**. In accounting, **comparability** results when different companies use the same accounting principles. Another type of comparability is consistency. **Consistency** means that a company uses the same accounting principles and methods from year to year. Information is **verifiable** if independent observers, using the same methods, obtain similar results. For accounting information to have relevance, it must be **timely**. That is, it must be available to decision-makers before it loses its capacity to influence decisions. For example, public companies like **Google** or **Best Buy** provide their annual reports to investors within 60 days of their year-end. Information has the quality of **understandability** if it is presented in a clear and concise fashion, so that reasonably informed users of that information can interpret it and comprehend its meaning.

## Assumptions in Financial Reporting

To develop accounting standards, the FASB relies on some key assumptions, as shown in Illustration 3B.2. These include assumptions about the monetary unit, economic entity, time period, and going concern.

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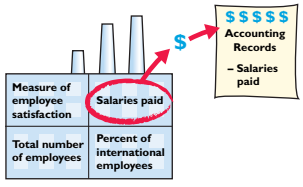
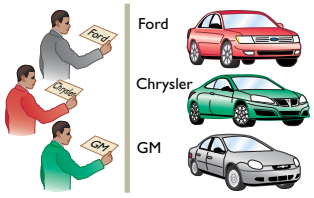
ILLUSTRATION 3B.2

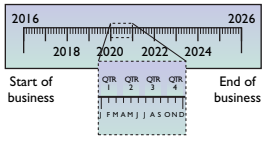
**Key assumptions in financial reporting**



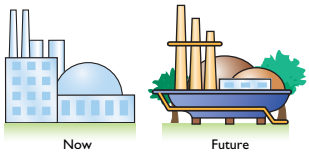

**Monetary Unit Assumption** The **monetary unit assumption** requires that only those things that can be expressed in money are included in the accounting records. This means that certain important information needed by investors, creditors, and managers, such as customer satisfaction, is not reported in the financial statements. This assumption relies on the monetary unit remaining relatively stable in value.




**Economic Entity Assumption** The **economic entity assumption** states that every economic entity can be separately identified and accounted for. In order to assess a company's performance and financial position accurately, it is important to not blur company transactions with personal transactions (especially those of its managers) or transactions of other companies.




**Time Period Assumption** Notice that the income statement, retained earnings statement, and statement of cash flows all cover periods of one year, and the balance sheet is prepared at the end of each year. The **time period assumption** states that the life of a business can be divided into artificial time periods and that useful reports covering those periods can be prepared for the business.




**Going Concern Assumption** The **going concern assumption** states that the business will remain in operation for the foreseeable future. Of course, many businesses do fail, but in general it is reasonable to assume that the business will continue operating.

# Principles in Financial Reporting

## Measurement Principles

GAAP generally uses one of two measurement principles, the historical cost principle or the fair value principle. Selection of which principle to follow generally relates to trade-offs between relevance and faithful representation.

**Historical Cost Principle.** The **historical cost principle** (or cost principle, discussed in Chapter 1) dictates that companies record assets at their cost. This is true not only at the time the asset is purchased but also over the time the asset is held. For example, if land that was purchased for $30,000 increases in value to $40,000, it continues to be reported at $30,000.

**Fair Value Principle.** The **fair value principle** (discussed in Chapter 1) indicates that assets and liabilities should be reported at fair value (the price received to sell an asset or settle a liability). Fair value information may be more useful than historical cost for certain types of assets and liabilities. For example, certain investment securities are reported at fair value because market price information is often readily available for these types of assets. In choosing between cost and fair value, two qualities that make accounting information useful for decision-making are used—relevance and faithful representation. In determining which measurement principle to use, the factual nature of cost figures are weighed versus the relevance of fair value. In general, most assets follow the historical cost principle because fair values may not be representationally faithful. Only in situations where assets are actively traded, such as investment securities, is the fair value principle applied.

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### Revenue Recognition Principle

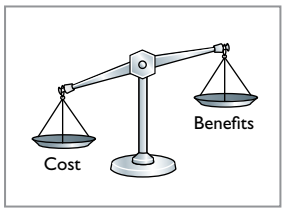
The **revenue recognition principle** requires that companies recognize revenue in the accounting period in which the performance obligation is satisfied. As discussed earlier in the chapter, in a service company, revenue is recognized at the time the service is performed. In a merchandising company, the performance obligation is generally satisfied when the goods transfer from the seller to the buyer (discussed in Chapter 5). At this point, the sales transaction is complete and the sales price established.

### Expense Recognition Principle

The **expense recognition principle** (discussed earlier in the chapter) dictates that companies recognize expense in the period in which they make efforts to generate revenue. Thus, expenses follow revenues.

### Full Disclosure Principle

The **full disclosure principle** (discussed in Chapter 11) requires that companies disclose all circumstances and events that would make a difference to financial statement users. If an important item cannot reasonably be reported directly in one of the four types of financial statements, then it should be discussed in notes that accompany the statements.




## Cost Constraint

Providing information is costly. In deciding whether companies should be required to provide a certain type of information, accounting standard-setters consider the **cost constraint**. It weighs the cost that companies will incur to provide the information against the benefit that financial statement users will gain from having the information available.

# Review and Practice

## Learning Objectives Review

**1 Explain the accrual basis of accounting and the reasons for adjusting entries.**

The time period assumption assumes that the economic life of a business is divided into artificial time periods. Accrual-basis accounting means that companies record events that change a company's financial statements in the periods in which those events occur, rather than in the periods in which the company receives or pays cash.

Companies make adjusting entries at the end of an accounting period. Such entries ensure that companies recognize revenues in the period in which the performance obligation is satisfied and recognize expenses in the period in which they are incurred. The major types of adjusting entries are deferrals (prepaid expenses and unearned revenues) and accruals (accrued revenues and accrued expenses).

**2 Prepare adjusting entries for deferrals.**

Deferrals are either prepaid expenses or unearned revenues. Companies make adjusting entries for deferrals to record the portion of the prepayment that represents the expense incurred or the revenue for services performed in the current accounting period.

**3 Prepare adjusting entries for accruals.**

Accruals are either accrued revenues or accrued expenses. Companies make adjusting entries for accruals to record revenues for services performed and expenses incurred in the current accounting period that have not been recognized through daily entries.

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**4 Describe the nature and purpose of an adjusted trial balance.**

An adjusted trial balance shows the balances of all accounts, including those that have been adjusted, at the end of an accounting period. Its purpose is to prove the equality of the total debit balances and total credit balances in the ledger after all adjustments.

***5 Prepare adjusting entries for the alternative treatment of deferrals.**

Companies may initially debit prepayments to an expense account. Likewise, they may credit unearned revenues to a revenue account. At the end of the period, these accounts may be overstated. The adjusting entries for prepaid expenses are a debit to an asset account and a credit to an expense account. Adjusting entries for unearned revenues are a debit to a revenue account and a credit to a liability account.

***6 Discuss financial reporting concepts.**

To be judged useful, information should have the primary characteristics of relevance and faithful representation. In addition, it should be comparable, consistent, verifiable, timely, and understandable.

The **monetary unit assumption** requires that companies include in the accounting records only transaction data that can be expressed in terms of money. The **economic entity assumption** states that economic events can be identified with a particular unit of accountability. The **time period assumption** states that the economic life of a business can be divided into artificial time periods and that meaningful accounting reports can be prepared for each period. The **going concern assumption** states that the company will continue in operation long enough to carry out its existing objectives and commitments.

The **historical cost principle** states that companies should record assets at their cost. The **fair value principle** indicates that assets and liabilities should be reported at fair value. The **revenue recognition principle** requires that companies recognize revenue in the accounting period in which the performance obligation is satisfied. The **expense recognition principle** dictates that efforts (expenses) be matched with results (revenues). The **full disclosure principle** requires that companies disclose circumstances and events that matter to financial statement users.

The **cost constraint** weighs the cost that companies incur to provide a type of information against its benefits to financial statement users.

## Glossary Review

**Accrual-basis accounting** Accounting basis in which companies record transactions that change a company's financial statements in the periods in which the events occur. (p. 3-3).

**Accruals** Adjusting entries for either accrued revenues or accrued expenses. (p. 3-5).

**Accrued expenses** Expenses incurred but not yet paid in cash or recorded. (p. 3-14).

**Accrued revenues** Revenues for services performed but not yet received in cash or recorded. (p. 3-13).

**Adjusted trial balance** A list of accounts and their balances after the company has made all adjustments. (p. 3-20).

**Adjusting entries** Entries made at the end of an accounting period to ensure that companies follow the revenue recognition and expense recognition principles. (p. 3-5).

**Book value** The difference between the cost of a depreciable asset and its related accumulated depreciation. (p. 3-10).

**Calendar year** An accounting period that extends from January 1 to December 31. (p. 3-3).

**Cash-basis accounting** Accounting basis in which companies record revenue when they receive cash and an expense when they pay out cash. (p. 3-3).

***Comparability** Ability to compare the accounting information of different companies because they use the same accounting principles. (p. 3-28).

***Consistency** Use of the same accounting principles and methods from year to year within a company. (p. 3-28).

**Contra asset account** An account offset against an asset account on the balance sheet. (p. 3-9).

***Cost constraint** Constraint that weighs the cost that companies will incur to provide the information against the benefit that financial statement users will gain from having the information available. (p. 3-30).

**Deferrals** Adjusting entries for either prepaid expenses or unearned revenues. (p. 3-5).

**Depreciation** The process of allocating the cost of an asset to expense over its useful life. (p. 3-9).

***Economic entity assumption** An assumption that every economic entity can be separately identified and accounted for. (p. 3-29).

**Expense recognition principle (matching principle)** The principle that companies recognize expense in the period in which they make efforts (consume assets or incur liabilities) to generate revenue. (pp. 3-4, 3-30).

***Fair value principle** Assets and liabilities should be reported at fair value (the price received to sell an asset or settle a liability). (p. 3-29).

***Faithful representation** Information that accurately depicts what really happened. (p. 3-28).

**Fiscal year** An accounting period that is one year in length. (p. 3-3).

***Full disclosure principle** Accounting principle that dictates that companies disclose circumstances and events that make a difference to financial statement users. (p. 3-30).

***Going concern assumption** The assumption that the company will continue in operation for the foreseeable future. (p. 3-29).

***Historical cost principle** An accounting principle that states that companies should record assets at their cost. (p. 3-29).

**Interim periods** Monthly or quarterly accounting time periods. (p. 3-3).

***Materiality** A company-specific aspect of relevance. An item is material when its size makes it likely to influence the decision of an investor or creditor. (p. 3-28).

***Monetary unit assumption** An assumption that requires that only those things that can be expressed in money are included in the accounting records. (p. 3-29).

**Prepaid expenses (prepayments)** Expenses paid in cash before they are used or consumed. (p. 3-6).

***Relevance** The quality of information that indicates the information makes a difference in a decision. (p. 3-28).

**Revenue recognition principle** The principle that companies recognize revenue in the accounting period in which the performance obligation is satisfied. (pp. 3-3, 3-30).

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*Timely Information that is available to decision-makers before it loses its capacity to influence decisions. (p. 3-28).

Time period assumption An assumption that accountants can divide the economic life of a business into artificial time periods. (pp. 3-3, 3-29).

*Understandability Information presented in a clear and concise fashion so that users can interpret it and comprehend its meaning. (p. 3-28).

Unearned revenues A liability recorded for cash received before services are performed. (p. 3-10).

Useful life The length of service of a long-lived asset. (p. 3-8).

*Verifiable The quality of information that occurs when independent observers, using the same methods, obtain similar results. (p. 3-28).

## Practice Multiple-Choice Questions

1. (LO 1) The revenue recognition principle states that:
   - **a.** revenue should be recognized in the accounting period in which a performance obligation is satisfied.
   - **b.** expenses should be matched with revenues.
   - **c.** the economic life of a business can be divided into artificial time periods.
   - **d.** the fiscal year should correspond with the calendar year.

2. (LO 1) The time period assumption states that:
   - **a.** companies must wait until the calendar year is completed to prepare financial statements.
   - **b.** companies use the fiscal year to report financial information.
   - **c.** the economic life of a business can be divided into artificial time periods.
   - **d.** companies record information in the time period in which the events occur.

3. (LO 1) Which of the following statements about the accrual basis of accounting is **false**?
   - **a.** Events that change a company's financial statements are recorded in the periods in which the events occur.
   - **b.** Revenue is recognized in the period in which services are performed.
   - **c.** This basis is in accordance with generally accepted accounting principles.
   - **d.** Revenue is recorded only when cash is received, and expense is recorded only when cash is paid.

4. (LO 1) The principle or assumption dictating that efforts (expenses) should be recognized in the period in which a company consumes assets or incurs liabilities to generate revenue is the:
   - **a.** expense recognition principle.
   - **b.** cost assumption.
   - **c.** time period assumption.
   - **d.** revenue recognition principle.

5. (LO 1) Adjusting entries are made to ensure that:
   - **a.** expenses are recognized in the period in which they are incurred.
   - **b.** revenues are recorded in the period in which services are performed.
   - **c.** balance sheet and income statement accounts have correct balances at the end of an accounting period.
   - **d.** All the responses above are correct.

6. (LO 1) Each of the following is a major type (or category) of adjusting entries **except**:
   - **a.** prepaid expenses.
   - **b.** accrued revenues.
   - **c.** accrued expenses.
   - **d.** recognized revenues.

7. (LO 2) The trial balance shows Supplies $1,350 and Supplies Expense $0. If $600 of supplies are on hand at the end of the period, the adjusting entry is:

| | | | |
|---|---|---|---|
| **a.** Supplies | 600 | | |
| Supplies Expense | | | 600 |
| **b.** Supplies | 750 | | |
| Supplies Expense | | | 750 |
| **c.** Supplies Expense | 750 | | |
| Supplies | | | 750 |
| **d.** Supplies Expense | 600 | | |
| Supplies | | | 600 |

8. (LO 2) Adjustments for prepaid expenses:
   - **a.** decrease assets and increase revenues.
   - **b.** decrease expenses and increase assets.
   - **c.** decrease assets and increase expenses.
   - **d.** decrease revenues and increase assets.

9. (LO 2) Accumulated Depreciation is:
   - **a.** a contra asset account.
   - **b.** an expense account.
   - **c.** an owner's equity account.
   - **d.** a liability account.

10. (LO 2) Rivera Company computes depreciation on delivery equipment at $1,000 for the month of June. The adjusting entry to record this depreciation is as follows.

| | | | |
|---|---|---|---|
| **a.** Depreciation Expense | 1,000 | | |
| Accumulated Depreciation—Rivera Company | | | 1,000 |
| **b.** Depreciation Expense | 1,000 | | |
| Equipment | | | 1,000 |
| **c.** Depreciation Expense | 1,000 | | |
| Accumulated Depreciation—Equipment | | | 1,000 |
| **d.** Equipment Expense | 1,000 | | |
| Accumulated Depreciation—Equipment | | | 1,000 |

11. (LO 2) Adjustments for unearned revenues:
   - **a.** decrease liabilities and increase revenues.
   - **b.** have an assets-and-revenues-account relationship.
   - **c.** increase assets and increase revenues.
   - **d.** decrease revenues and decrease assets.

12. (LO 3) Adjustments for accrued revenues:
   - **a.** have a liabilities-and-revenues-account relationship.
   - **b.** have an assets-and-revenues-account relationship.
   - **c.** decrease assets and revenues.
   - **d.** decrease liabilities and increase revenues.

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**13.** **(LO 3)** Anika Wilson earned a salary of $400 for the last week of September. She will be paid on October 1. The adjusting entry for Anika's employer at September 30 is:

**a.** No entry is required.

**b.**

| | | |
|---|---|---|
| Salaries and Wages Expense | 400 | |
| Salaries and Wages Payable | | 400 |

**c.**

| | | |
|---|---|---|
| Salaries and Wages Expense | 400 | |
| Cash | | 400 |

**d.**

| | | |
|---|---|---|
| Salaries and Wages Payable | 400 | |
| Cash | | 400 |

**14.** **(LO 4)** Which of the following statements is **incorrect** concerning the adjusted trial balance?

**a.** An adjusted trial balance proves the equality of the total debit balances and the total credit balances in the ledger after all adjustments are made.

**b.** The adjusted trial balance provides the primary basis for the preparation of financial statements.

**c.** The adjusted trial balance lists the account balances segregated by assets and liabilities.

**d.** The adjusted trial balance is prepared after the adjusting entries have been journalized and posted.

***15.** **(LO 5)** The trial balance shows Supplies $0 and Supplies Expense $1,500. If $800 of supplies are on hand at the end of the period, the adjusting entry is:

**a.** debit Supplies $800 and credit Supplies Expense $800.

**b.** debit Supplies Expense $800 and credit Supplies $800.

**c.** debit Supplies $700 and credit Supplies Expense $700.

**d.** debit Supplies Expense $700 and credit Supplies $700.

***16.** **(LO 6)** Neutrality is an ingredient of:

| | Faithful Representation | Relevance |
|---|---|---|
| **a.** | Yes | Yes |
| **b.** | No | No |
| **c.** | Yes | No |
| **d.** | No | Yes |

***17.** **(LO 6)** Which item is a constraint in financial accounting?

**a.** Comparability. **c.** Cost.

**b.** Materiality. **d.** Consistency.

## Solutions

**1.** **a.** Revenue should be recognized in the accounting period in which a performance obligation is satisfied. The other choices are incorrect because (b) defines the expense recognition principle, (c) describes the time period assumption, and (d) a company's fiscal year does not need to correspond with the calendar year.

**2.** **c.** The economic life of a business can be divided into artificial time periods. The other choices are incorrect because (a) companies report their activities on a more frequent basis and not necessarily based on a calendar year; (b) companies report financial information more frequently than annually, such as monthly or quarterly, in order to evaluate results of operations; and (d) describes accrual-basis accounting.

**3.** **d.** Under the accrual basis of accounting, revenue is recognized when the performance obligation is satisfied, not when cash is received, and expense is recognized when incurred, not when cash is paid. The other choices are all true statements.

**4.** **a.** The expense recognition principle dictates that companies recognize expense in the period in which they make efforts to generate revenue. The other choices are incorrect because (b) there is no cost assumption, but the historical cost principle states that assets should be recorded at their cost; (c) the time period assumption states that the economic life of a business can be divided into artificial time periods; and (d) the revenue recognition principle indicates that revenue should be recognized in the accounting period in which a performance obligation is satisfied.

**5.** **d.** Adjusting entries are made for the reasons noted in choices (a), (b), and (c). The other choices are true statements, but (d) is the best answer.

**6.** **d.** Unearned revenues, not recognized revenues, is one of the major categories of adjusting entries. The other choices all list one of the major categories of adjusting entries.

**7.** **c.** Debiting Supplies Expense for $750 and crediting Supplies for $750 ($1,350 – $600) will decrease Supplies and increase Supplies Expense. The other choices are incorrect because (a) will increase Supplies and decrease Supplies Expense and also for the wrong amounts, (b) will increase Supplies and decrease Supplies Expense, and (d) will cause Supplies to have an incorrect balance of $750 ($1,350 – $600) and Supplies Expense to have an incorrect balance of $600 ($0 + $600).

**8.** **c.** Adjustments for prepaid expenses decrease assets and increase expenses. The other choices are incorrect because an adjusting entry for prepaid expenses (a) increases expenses, not revenues; (b) increases, not decreases, expenses and decreases, not increases, assets; and (d) increases expenses, not decreases, revenues and decreases, not increases, assets.

**9.** **a.** Accumulated Depreciation is a contra asset account; it is offset against an asset account on the balance sheet. The other choices are incorrect because Accumulated Depreciation is not (b) an expense account nor located on the income statement, (c) an owner's equity account, or (d) a liability account.

**10.** **c.** The adjusting entry is to debit Depreciation Expense and credit Accumulated Depreciation—Equipment. The other choices are incorrect because (a) the contra asset account title includes the asset being depreciated, not the company name; (b) the credit should be to the contra asset account, not directly to the asset; and (d) the debit for this entry should be Depreciation Expense, not Equipment Expense.

**11.** **a.** Adjustments for unearned revenues will consist of a debit (decrease) to unearned revenues (a liability) and a credit (increase) to a revenue account. Choices (b), (c), and (d) are incorrect because adjustments for unearned revenues will increase revenues but will have no effect on assets.

**12.** **b.** Adjustments for accrued revenues will have an assets-and-revenues-account relationship. Choices (a) and (d) are incorrect because adjustments for accrued revenues have no effect on liabilities. Choice (c) is incorrect because these adjustments will increase, not decrease, both assets and revenues.

**13.** **b.** The adjusting entry should be to debit Salaries and Wages Expense for $400 and credit Salaries and Wages Payable for $400.

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The other choices are incorrect because (a) if an adjusting entry is not made, the amount of money owed (liability) that is shown on the balance sheet will be understated and the amount of salaries and wages expense will also be understated; (c) the credit account is incorrect as adjusting entries never affect cash; and (d) the debit account should be Salaries and Wages Expense and the credit account should be Salaries and Wages Payable. Adjusting entries never affect cash.

**14. c.** The accounts on the trial balance can be segregated by the balance in the account—either debit or credit—not whether they are assets or liabilities. All accounts in the ledger are included in the adjusted trial balance, not just assets and liabilities. The other choices are all true statements.

***15. a.** This adjusting entry correctly states the Supplies account at $800 ($0 + $800) and the Supplies Expense account at $700 ($1,500 – $800). The other choices are incorrect because (b) will cause the Supplies account to have a credit balance (assets have a normal debit balance) and the Supplies Expense account to be stated at $2,300, which is too high; (c) will result in a $700 balance in the Supplies account ($100 too low) and an $800 balance in the Supplies Expense account ($100 too high); and (d) will cause the Supplies account to have a credit balance (assets have a normal debit balance) and the Supplies Expense account to be stated at $2,200, which is too high.

***16. c.** Neutrality is one of the enhancing qualities that makes information more representationally faithful, not relevant. Therefore, choices (a), (b), and (d) are incorrect.

***17. c.** Cost is a constraint in financial accounting. The other choices are all enhancing qualities of useful information.

## Practice Brief Exercises

*Indicate why adjusting entries are needed.*

**1. (LO 1)** The ledger of Dey Company includes the following accounts. Explain why each account may need adjustment.

**a.** Supplies.
**b.** Unearned Service Revenue.
**c.** Salaries and Wages Payable.
**d.** Interest Payable.

### Solution

**1. a.** Supplies: to recognize supplies used during the period.
**b.** Unearned Service Revenue: to record revenue generated for services performed.
**c.** Salaries and Wages Payable: to recognize salaries and wages accrual to employees at the end of a reporting period.
**d.** Interest Payable: to recognize interest accrued but unpaid on notes payable.

*Prepare adjusting entry for depreciation.*

**2. (LO 2)** **Financial Statement** At the end of its first year, the trial balance of Denton Company shows Equipment of $40,000 and zero balances in Accumulated Depreciation—Equipment and Depreciation Expense. Depreciation for the year is estimated to be $8,000. Prepare the adjusting entry for depreciation at December 31, post the adjustments to T-accounts, and indicate the balance sheet presentation of the equipment at December 31.

### Solution

**2.**

| | | | |
|---|---|---|---|
| Dec. 31 | Depreciation Expense | 8,000 | |
| | Accumulated Depreciation—Equipment | | 8,000 |

| Depreciation Expense | | Accum. Depreciation—Equipment | |
|---|---|---|---|
| 12/31 | 8,000 | 12/31 | 8,000 |

Balance Sheet:

| | | |
|---|---|---|
| Equipment | $40,000 | |
| Less: Accumulated Depreciation—Equipment | 8,000 | $32,000 |

*Prepare adjusting entries for accruals.*

**3. (LO 3)** You are asked to prepare the following accrued adjusting entries at December 31.

1. Services performed but not recorded are $4,200.
2. Utility expenses incurred but not paid are $660.
3. Salaries and wages earned by employees of $3,000 are unpaid.

Use the following account titles: Accounts Payable, Accounts Receivable, Service Revenue, Salaries and Wages Expense, Salaries and Wages Payable, and Utility Expense.

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**Solution**

**3.**

| | | | | |
|---|---|---|---|---|
| Dec. 31 | Accounts Receivable | | 4,200 | |
| | Service Revenue | | | 4,200 |
| 31 | Utility Expense | | 660 | |
| | Accounts Payable | | | 660 |
| 31 | Salaries and Wage Expense | | 3,000 | |
| | Salaries and Wages Payable | | | 3,000 |

**4. (LO 1, 2, 3)** The trial balance for Blair Company includes the following balance sheet accounts. Identify the accounts that may require adjustment. For each account that requires adjustment, indicate (a) the type of adjusting entry (prepaid expense, unearned revenue, accrued revenue, or accrued expense) and (b) the related account in the adjusting entry.

*Analyze accounts in an unadjusted trial balance.*

| | |
|---|---|
| Accounts Receivable | Interest Payable |
| Supplies | Unearned Service Revenue |
| Prepaid Insurance | |

**Solution**

**4.**

| Account | Type of Adjustment | Related Account |
|---|---|---|
| Accounts Receivable | Accrued Revenue | Service Revenue |
| Supplies | Prepaid Expense | Supplies Expense |
| Prepaid Insurance | Prepaid Expense | Insurance Expense |
| Interest Payable | Accrued Expense | Interest Expense |
| Unearned Service Revenue | Unearned Revenue | Service Revenue |

**5. (LO 4)** **Financial Statement** The adjusted trial balance of Harmony Company includes the following accounts at December 31, 2020: Cash $12,000, Owner's Capital $22,000, Owner's Drawing $3,000, Service Revenue $41,000, Rent Expense $900, Salaries and Wages Expense $6,000, Supplies Expense $700, and Depreciation Expense $1,800. Prepare an income statement for the year.

*Prepare an income statement from an adjusted trial balance.*

**Solution**

**5.**

**Harmony Company**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Revenues | | |
| Service revenue | | $41,000 |
| Expenses | | |
| Salaries and wages expense | $6,000 | |
| Rent expense | 900 | |
| Depreciation expense | 1,800 | |
| Supplies expense | 700 | |
| Total expenses | | 9,400 |
| Net income | | $31,600 |

## Practice Exercises

**1. (LO 2, 3)** Evan Watts, D.D.S., opened a dental practice on January 1, 2020. During the first month of operations, the following transactions occurred.

*Prepare adjusting entries.*

1. Watts performed services for patients totaling $2,400. These services have not yet been recorded.
2. Utility expenses incurred but not paid prior to January 31 totaled $400.
3. Purchased dental equipment on January 1 for $80,000, paying $20,000 in cash and signing a $60,000, 3-year note payable. The equipment depreciates $500 per month. Interest is $600 per month.
4. Purchased a one-year malpractice insurance policy on January 1 for $12,000.
5. Purchased $2,600 of dental supplies. On January 31, determined that $900 of supplies were on hand.

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**Instructions**

Prepare the adjusting entries on January 31. Account titles are Accumulated Depreciation—Equipment, Depreciation Expense, Service Revenue, Accounts Receivable, Insurance Expense, Interest Expense, Interest Payable, Prepaid Insurance, Supplies, Supplies Expense, Utilities Expense, and Utilities Payable.

**Solution**

**1.**

| | | | |
|---|---|---|---|
| Jan. 31 | Accounts Receivable | 2,400 | |
| | Service Revenue | | 2,400 |
| | Utilities Expense | 400 | |
| | Utilities Payable | | 400 |
| | Depreciation Expense | 500 | |
| | Accumulated Depreciation—Equipment | | 500 |
| | Interest Expense | 600 | |
| | Interest Payable | | 600 |
| | Insurance Expense ($12,000 ÷ 12) | 1,000 | |
| | Prepaid Insurance | | 1,000 |
| | Supplies Expense ($2,600 – $900) | 1,700 | |
| | Supplies | | 1,700 |

*Prepare correct income statement.*

**2. (LO 2, 3, 4)** **Financial Statement** The income statement of Venden Co. for the month of July shows net income of $4,000 based on Service Revenue $8,700, Salaries and Wages Expense $2,500, Supplies Expense $1,700, and Utilities Expense $500. In reviewing the statement, you discover the following.

1. Insurance expired during July of $700 was omitted.
2. Supplies expense includes $250 of supplies that are still on hand at July 31.
3. Depreciation on equipment of $300 was omitted.
4. Accrued but unpaid wages at July 31 of $400 were not included.
5. Services performed but unrecorded totaled $650.

**Instructions**

Prepare a correct income statement for July 2020.

**Solution**

**2.**

**Venden Co.**
**Income Statement**
**For the Month Ended July 31, 2020**

| | | |
|---|---|---|
| Revenues | | |
| Service revenue ($8,700 + $650) | | $9,350 |
| Expenses | | |
| Salaries and wages expense ($2,500 + $400) | $2,900 | |
| Supplies expense ($1,700 – $250) | 1,450 | |
| Utilities expense | 500 | |
| Insurance expense | 700 | |
| Depreciation expense | 300 | |
| Total expenses | | 5,850 |
| Net income | | $3,500 |

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## Practice Problem

**(LO 2, 3)** The Green Thumb Lawn Care Company began operations on April 1. At April 30, the trial balance shows the following balances for selected accounts.

*Prepare adjusting entries from selected data.*

| | |
|---|---|
| Prepaid Insurance | $ 3,600 |
| Equipment | 28,000 |
| Notes Payable | 20,000 |
| Unearned Service Revenue | 4,200 |
| Service Revenue | 1,800 |

Analysis reveals the following additional data.

1. Prepaid insurance is the cost of a 2-year insurance policy, effective April 1.
2. Depreciation on the equipment is $500 per month.
3. The note payable is dated April 1. It is a 6-month, 12% note.
4. Seven customers paid for the company's 6-month lawn service package of $600 beginning in April. The company performed services for these customers in April.
5. Lawn services performed for other customers but not recorded at April 30 totaled $1,500.

### Instructions

Prepare the adjusting entries for the month of April. Show computations.

### Solution

**GENERAL JOURNAL** J1

| Date | Account Titles and Explanation | Ref. | Debit | Credit |
|---|---|---|---|---|
| | Adjusting Entries | | | |
| Apr. 30 | Insurance Expense | | 150 | |
| | Prepaid Insurance | | | 150 |
| | (To record insurance expired: $3,600 ÷ 24 = $150 per month) | | | |
| 30 | Depreciation Expense | | 500 | |
| | Accumulated Depreciation—Equipment | | | 500 |
| | (To record monthly depreciation) | | | |
| 30 | Interest Expense | | 200 | |
| | Interest Payable | | | 200 |
| | (To record interest on notes payable: $20,000 × 12% × 1/12 = $200) | | | |
| 30 | Unearned Service Revenue | | 700 | |
| | Service Revenue | | | 700 |
| | (To record revenue for services performed: $600 ÷ 6 = $100; $100 per month × 7 = $700) | | | |
| 30 | Accounts Receivable | | 1,500 | |
| | Service Revenue | | | 1,500 |
| | (To record revenue for services performed) | | | |

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*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendices to the chapter.

## Questions

**1.** **a.** How does the time period assumption affect an accountant's analysis of business transactions?

**b.** Explain the terms fiscal year, calendar year, and interim periods.

**2.** Define two generally accepted accounting principles that relate to adjusting the accounts.

**3.** Susan Hardy, a lawyer, accepts a legal engagement in March, performs the work in April, and is paid in May. If Hardy's law firm prepares monthly financial statements, when should it recognize revenue from this engagement? Why?

**4.** Why do accrual-basis financial statements provide more useful information than cash-basis statements?

**5.** In completing the engagement in Question 3, Hardy pays no costs in March, $2,000 in April, and $2,500 in May (incurred in April). How much expense should the firm deduct from revenues in the month when it recognizes the revenue? Why?

**6.** "Adjusting entries are required by the historical cost principle of accounting." Do you agree? Explain.

**7.** Why may a trial balance not contain up-to-date and complete financial information?

**8.** Distinguish between the two categories of adjusting entries, and identify the types of adjustments applicable to each category.

**9.** What is the debit/credit effect of a prepaid expense adjusting entry?

**10.** "Depreciation is a valuation process that results in the reporting of the fair value of the asset." Do you agree? Explain.

**11.** Explain the differences between depreciation expense and accumulated depreciation.

**12.** G. Phillips Company purchased equipment for $18,000. By the current balance sheet date, $6,000 had been depreciated. Indicate the balance sheet presentation of the data.

**13.** What is the debit/credit effect of an unearned revenue adjusting entry?

**14.** Whistler Corp. performed services for a customer but has not yet recorded payment, nor has it recorded any entry related to the work. Which of the following accounts are involved in the adjusting entry: (a) asset, (b) liability, (c) revenue, or (d) expense? For the accounts selected, indicate whether they would be debited or credited in the entry.

**15.** A company fails to recognize an expense incurred but not paid. Indicate which of the following accounts is debited and which is credited in the adjusting entry: (a) asset, (b) liability, (c) revenue, or (d) expense.

**16.** A company makes an accrued revenue adjusting entry for $900 and an accrued expense adjusting entry for $700. How much was net income understated prior to these entries? Explain.

**17.** On January 9, a company pays $5,000 for salaries and wages of which $2,000 was reported as Salaries and Wages Payable on December 31. Give the entry to record the payment.

**18.** For each of the following items before adjustment, indicate the type of adjusting entry (prepaid expense, unearned revenue, accrued revenue, or accrued expense) that is needed to correct the misstatement. If an item could result in more than one type of adjusting entry, indicate each of the types.

**a.** Assets are understated.
**b.** Liabilities are overstated.
**c.** Liabilities are understated.
**d.** Expenses are understated.
**e.** Assets are overstated.
**f.** Revenue is understated.

**19.** One-half of the adjusting entry is given below. Indicate the account title for the other half of the entry.

**a.** Salaries and Wages Expense is debited.
**b.** Depreciation Expense is debited.
**c.** Interest Payable is credited.
**d.** Supplies is credited.
**e.** Accounts Receivable is debited.
**f.** Unearned Service Revenue is debited.

**20.** "An adjusting entry may affect more than one balance sheet or income statement account." Do you agree? Why or why not?

**21.** Why is it possible to prepare financial statements directly from an adjusted trial balance?

***22.** Dashan Company debits Supplies Expense for all purchases of supplies and credits Rent Revenue for all advanced rentals. For each type of adjustment, give the adjusting entry.

***23.** **a.** What is the primary objective of financial reporting?

**b.** Identify the characteristics of useful accounting information.

***24.** Dan Fineman, the president of King Company, is pleased. King substantially increased its net income in 2020 while keeping its unit inventory relatively the same. Howard Gross, chief accountant, cautions Dan, however. Gross says that since King changed its method of inventory valuation, there is a consistency problem and it is difficult to determine whether King is better off. Is Gross correct? Why or why not?

***25.** What is the distinction between comparability and consistency?

***26.** Describe the constraint inherent in the presentation of accounting information.

***27.** Quinn Becker is president of Better Books. She has no accounting background. Becker cannot understand why fair value is not used as the basis for all accounting measurement and reporting. Discuss.

***28.** What is the economic entity assumption? Give an example of its violation.

## Brief Exercises

*Indicate why adjusting entries are needed.*

**BE3.1 (LO 1)** The ledger of Althukair Company includes the following accounts. Explain why each account may require adjustment.

**a.** Prepaid Insurance.
**b.** Depreciation Expense.
**c.** Unearned Service Revenue.
**d.** Interest Payable.

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**BE3.2 (LO 1, 2)** Gee Company accumulates the following adjustment data at December 31. Indicate (a) the type of adjustment (prepaid expense, accrued revenue, and so on), and (b) the status of accounts before adjustment (for example, "assets understated and revenues understated").

*Identify the major types of adjusting entries.*

1. Supplies of $150 are on hand.
2. Services performed but not recorded total $900.
3. Interest of $200 has accumulated on a note payable.
4. Rent collected in advance totaling $850 has been earned.

**BE3.3 (LO 2)** Schramel Advertising Company's trial balance at December 31 shows Supplies $6,700 and Supplies Expense $0. On December 31, there are $2,100 of supplies on hand. Prepare the adjusting entry at December 31, and using T-accounts, enter the balances in the accounts, post the adjusting entry, and indicate the adjusted balance in each account.

*Prepare adjusting entry for supplies.*

**BE3.4 (LO 2)** At the end of its first year, the trial balance of Wolowitz Company shows Equipment $30,000 and zero balances in Accumulated Depreciation—Equipment and Depreciation Expense. Depreciation for the year is estimated to be $3,750. Prepare the annual adjusting entry for depreciation at December 31, post the adjustments to T-accounts, and indicate the balance sheet presentation of the equipment at December 31.

*Prepare adjusting entry for depreciation.*

**BE3.5 (LO 2)** On July 1, 2019, Major Co. pays $15,120 to Mesa Insurance Co. for a 4-year insurance contract. Both companies have fiscal years ending December 31. For Major Co., journalize and post the entry on July 1 and the annual adjusting entry on December 31.

*Prepare adjusting entry for prepaid expense.*

**BE3.6 (LO 2)** Using the data in BE3.5, journalize and post the entry on July 1 and the adjusting entry on December 31 for Mesa Insurance Co. Mesa uses the accounts Unearned Service Revenue and Service Revenue.

*Prepare adjusting entry for unearned revenue.*

**BE3.7 (LO 3)** The bookkeeper for Abduli Company asks you to prepare the following accrued adjusting entries at December 31.

*Prepare adjusting entries for accruals.*

1. Interest on notes payable of $400 is accrued.
2. Services performed but not recorded total $2,300.
3. Salaries earned by employees of $900 have not been recorded.

Use the following account titles: Service Revenue, Accounts Receivable, Interest Expense, Interest Payable, Salaries and Wages Expense, and Salaries and Wages Payable.

**BE3.8 (LO 1, 2, 3)** The trial balance of Beowulf Company includes the following balance sheet accounts, which may require adjustment. For each account that requires adjustment, indicate (a) the type of adjusting entry (prepaid expense, unearned revenue, accrued revenue, or accrued expense) and (b) the related account in the adjusting entry.

*Analyze accounts in an unadjusted trial balance.*

| | |
|---|---|
| Accounts Receivable | Interest Payable |
| Prepaid Insurance | Unearned Service Revenue |
| Accumulated Depreciation—Equipment | |

**BE3.9 (LO 4)** **Financial Statement** The adjusted trial balance of Miller Company at December 31, 2020, includes the following accounts: Owner's Capital $16,400, Owner's Drawings $7,000, Service Revenue $39,000, Salaries and Wages Expense $16,000, Insurance Expense $2,000, Rent Expense $4,000, Supplies Expense $1,500, and Depreciation Expense $1,300. Prepare an income statement for the year.

*Prepare an income statement from an adjusted trial balance.*

**BE3.10 (LO 4)** **Financial Statement** Partial adjusted trial balance data for Miller Company is presented in BE3.9. The balance in Owner's Capital is the balance as of January 1. Prepare an owner's equity statement for the year assuming net income is $14,200 for the year.

*Prepare an owner's equity statement from an adjusted trial balance.*

***BE3.11 (LO 5)** Eckholm Company records all prepayments in income statement accounts. At April 30, the trial balance shows Supplies Expense $2,800, Service Revenue $9,200, and zero balances in related

*Prepare adjusting entries under alternative treatment of deferrals.*

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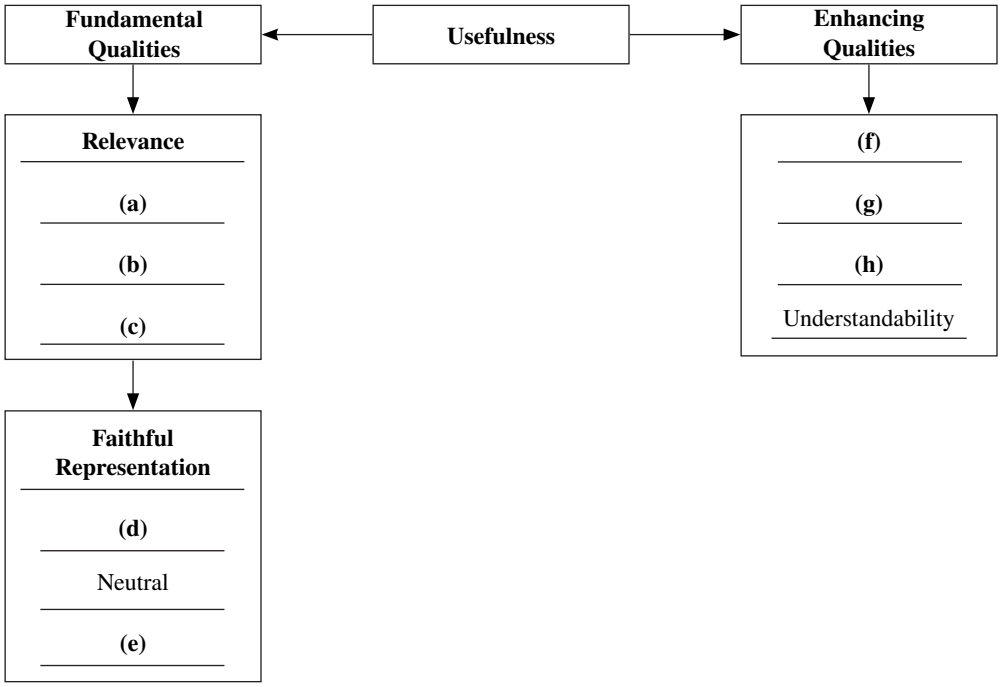
balance sheet accounts. Prepare the adjusting entries at April 30 assuming (a) $400 of supplies on hand and (b) $3,000 of service revenue should be reported as unearned.

*Identify characteristics of useful information.*

***BE3.12 (LO 6)** The accompanying chart shows the qualitative characteristics of useful accounting information. Fill in the blanks.




*Identify characteristics of useful information.*

***BE3.13 (LO 6)** Given the characteristics of useful accounting information, complete each of the following statements.

**a.** For information to be _____, it should have predictive value, confirmatory value, and be material.

**b.** _____ is the quality of information that gives assurance that the information accurately depicts what really happened.

**c.** _____ means using the same accounting principles and methods from year to year within a company.

*Identify characteristics of useful information.*

***BE3.14 (LO 6)** Here are some qualitative characteristics of useful accounting information:

**1.** Predictive value. **3.** Verifiable.

**2.** Neutral. **4.** Timely.

Match each qualitative characteristic to one of the following statements.

_____ **a.** Accounting information should help provide accurate expectations about future events.

_____ **b.** Accounting information cannot be selected, prepared, or presented to favor one set of interested users over another.

_____ **c.** The quality of information that occurs when independent observers, using the same methods, obtain similar results.

_____ **d.** Accounting information must be available to decision-makers before it loses its capacity to influence their decisions.

*Define full disclosure principle.*

***BE3.15 (LO 6)** Select the response that completes the following statement correctly. The full disclosure principle dictates that:

**a.** financial statements should disclose all assets at their cost.

**b.** financial statements should disclose only those events that can be measured in currency.

**c.** financial statements should disclose all events and circumstances that would matter to users of financial statements.

**d.** financial statements should not be relied on unless an auditor has expressed an unqualified opinion on them.

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## DO IT! Exercises

**DO IT! 3.1 (LO 1)** Below is a list of concepts in the left column, with a description of the concept in the right column. There are more descriptions provided than concepts. Match the description of the concept to the concept.

*Identify timing concepts.*

**1.** ____ Cash-basis accounting.
**2.** ____ Fiscal year.
**3.** ____ Revenue recognition principle.
**4.** ____ Expense recognition principle.

**a.** Monthly and quarterly time periods.
**b.** Accountants divide the economic life of a business into artificial time periods.
**c.** Efforts (expenses) should be recognized in the period in which a company uses assets or incurs liabilities to generate accomplishments (revenues).
**d.** Companies record revenues when they receive cash and record expenses when they pay out cash.
**e.** An accounting time period that is one year in length.
**f.** An accounting time period that starts on January 1 and ends on December 31.
**g.** Companies record transactions in the period in which the events occur.
**h.** Recognize revenue in the accounting period in which a performance obligation is satisfied.

**DO IT! 3.2 (LO 2)** The ledger of Milton, Inc. on March 31, 2020, includes the following selected accounts before adjusting entries.

*Prepare adjusting entries for deferrals.*

| | Debit | Credit |
|---|---|---|
| Prepaid Insurance | $ 2,400 | |
| Supplies | 2,500 | |
| Equipment | 30,000 | |
| Unearned Service Revenue | | $9,000 |

An analysis of the accounts shows the following.

**1.** Insurance expires at the rate of $400 per month.
**2.** Supplies on hand total $1,600.
**3.** The equipment depreciates $480 per month.
**4.** During March, services were performed for two-fifths of the unearned service revenue.

Prepare the adjusting entries for the month of March.

**DO IT! 3.3 (LO 3)** Fiske Computer Services began operations in July 2020. At the end of the month, the company prepares monthly financial statements. It has the following information for the month.

*Prepare adjusting entries for accruals.*

**1.** At July 31, the company owed employees $1,300 in salaries that the company will pay in August.
**2.** On July 1, the company borrowed $20,000 from a local bank on a 10-year note. The annual interest rate is 6%.
**3.** Service revenue unrecorded in July totaled $2,400.

Prepare the adjusting entries needed at July 31, 2020.

**DO IT! 3.4 (LO 4)** **Financial Statement** Ming Company was organized on April 1, 2020. The company prepares quarterly financial statements. The adjusted trial balance amounts at June 30 are as follows.

*Calculate amounts from trial balance.*

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| | Debit | | Credit |
|---|---|---|---|
| Cash | $ 5,360 | Accumulated Depreciation—Equipment | $ 700 |
| Accounts Receivable | 580 | Notes Payable | 4,000 |
| Prepaid Rent | 1,120 | Accounts Payable | 790 |
| Supplies | 920 | Salaries and Wages Payable | 300 |
| Equipment | 12,000 | Interest Payable | 40 |
| Owner's Drawings | 500 | Unearned Rent Revenue | 400 |
| Salaries and Wages Expense | 7,400 | Owner's Capital | 11,200 |
| Rent Expense | 1,200 | Service Revenue | 11,360 |
| Depreciation Expense | 700 | Rent Revenue | 1,600 |
| Supplies Expense | 160 | | $30,390 |
| Utilities Expense | 410 | | |
| Interest Expense | 40 | | |
| | $30,390 | | |

**a.** Determine the net income for the quarter April 1 to June 30.

**b.** Determine the total assets and total liabilities at June 30, 2020, for Ming Company.

**c.** Determine the amount that appears for Owner's Capital at June 30, 2020.

## Exercises

*Explain the time period assumption.*

**E3.1 (LO 1)** Chloe Davis has prepared the following list of statements about the time period assumption.

1. Adjusting entries would not be necessary if a company's life were not divided into artificial time periods.
2. The IRS requires companies to file annual tax returns.
3. Accountants divide the economic life of a business into artificial time periods, but each transaction affects only one of these periods.
4. Accounting time periods are generally a month, a quarter, or a year.
5. A time period lasting one year is called an interim period.
6. All fiscal years are calendar years, but not all calendar years are fiscal years.

### Instructions

Identify each statement as true or false. If false, indicate how to correct the statement.

*Distinguish between cash and accrual basis of accounting.*

**E3.2 (LO 1)** **Writing** On numerous occasions, proposals have surfaced to put the federal government on the accrual basis of accounting. This is no small issue. If this basis were used, it would mean that billions in unrecorded liabilities would have to be booked, and the federal deficit would increase substantially.

### Instructions

**a.** What is the difference between accrual-basis accounting and cash-basis accounting?

**b.** Why would politicians prefer the cash basis over the accrual basis?

**c.** Write a letter to your senator explaining why the federal government should adopt the accrual basis of accounting.

*Compute cash and accrual accounting income.*

**E3.3 (LO 1)** Carillo Industries collected $108,000 from customers in 2020. Of the amount collected, $25,000 was for services performed in 2019. In addition, Carillo performed services worth $36,000 in 2020, which will not be collected until 2021.

Carillo Industries also paid $72,000 for expenses in 2020. Of the amount paid, $30,000 was for expenses incurred on account in 2019. In addition, Carillo incurred $42,000 of expenses in 2020, which will not be paid until 2021.

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### Instructions

**a.** Compute 2020 cash-basis net income.

**b.** Compute 2020 accrual-basis net income.

**E3.4 (LO 1, 2, 3)** Luong Corporation encounters the following situations:

*Identify the type of adjusting entry needed.*

1. Luong collects $1,300 from a customer in 2020 for services to be performed in 2021.
2. Luong incurs utility expense which is not yet paid in cash or recorded.
3. Luong's employees worked 3 days in 2020 but will not be paid until 2021.
4. Luong performs services for customers but has not yet received cash or recorded the transaction.
5. Luong paid $2,800 rent on December 1 for the 4 months starting December 1.
6. Luong received cash for future services and recorded a liability until the service was performed.
7. Luong performed consulting services for a client in December 2020. On December 31, it had not billed the client for services provided of $1,200.
8. Luong paid cash for an expense and recorded an asset until the item was used up.
9. Luong purchased $900 of supplies in 2020; at year-end, $400 of supplies remain unused.
10. Luong purchased equipment on January 1, 2020; the equipment will be used for 5 years.
11. Luong borrowed $12,000 on October 1, 2020, signing an 8% one-year note payable.

### Instructions

Identify what type of adjusting entry (prepaid expense, unearned revenue, accrued expense, or accrued revenue) is needed in each situation at December 31, 2020.

**E3.5 (LO 2, 3)** Devin Wolf Company has the following balances in selected accounts on December 31, 2020.

*Prepare adjusting entries from selected data.*

| | |
|---|---|
| Accounts Receivable | $ –0– |
| Accumulated Depreciation—Equipment | –0– |
| Equipment | 7,000 |
| Interest Payable | –0– |
| Notes Payable | 10,000 |
| Prepaid Insurance | 2,100 |
| Salaries and Wages Payable | –0– |
| Supplies | 2,450 |
| Unearned Service Revenue | 32,000 |

All the accounts have normal balances. The information below has been gathered at December 31, 2020.

1. Devin Wolf Company borrowed $10,000 by signing a 9%, one-year note on September 1, 2020.
2. A count of supplies on December 31, 2020, indicates that supplies of $900 are on hand.
3. Depreciation on the equipment for 2020 is $1,000.
4. Devin Wolf Company paid $2,100 for 12 months of insurance coverage on June 1, 2020.
5. On December 1, 2020, Devin Wolf collected $32,000 for consulting services to be performed from December 1, 2020, through March 31, 2021.
6. Devin Wolf performed consulting services for a client in December 2020. The client will be billed $4,200.
7. Devin Wolf Company pays its employees total salaries of $9,000 every Monday for the preceding 5-day week (Monday through Friday). On Monday, December 29, employees were paid for the week ending December 26. All employees worked the last 3 days of 2020.

### Instructions

Prepare adjusting entries for the seven items described above.

**E3.6 (LO 2, 3, 4)** Mendoza Company accumulates the following adjustment data at December 31.

*Identify types of adjustments and account relationships.*

1. Services performed but unbilled total $3,000.
2. Supplies of $300 have been used.
3. Utility expenses of $552 are unpaid.
4. Services performed of $260 collected in advance.
5. Salaries of $800 are unpaid.
6. Prepaid insurance totaling $350 has expired.

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**Instructions**

For each of the above items indicate the following.

**a.** The type of adjustment (prepaid expense, unearned revenue, accrued revenue, or accrued expense).

**b.** The status of accounts before adjustment (overstatement or understatement).

*Prepare adjusting entries from selected account data.*

**E3.7 (LO 2, 3)** The ledger of Passehl Rental Agency on March 31 of the current year includes the selected accounts, shown below, before adjusting entries have been prepared.

| | Debit | Credit |
|---|---|---|
| Prepaid Insurance | $ 3,600 | |
| Supplies | 2,800 | |
| Equipment | 25,000 | |
| Accumulated Depreciation—Equipment | | $ 8,400 |
| Notes Payable | | 20,000 |
| Unearned Rent Revenue | | 10,200 |
| Rent Revenue | | 60,000 |
| Interest Expense | –0– | |
| Salaries and Wages Expense | 14,000 | |

An analysis of the accounts shows the following.

1. The equipment depreciates $400 per month.
2. One-third of the unearned rent revenue was earned during the quarter.
3. Interest of $500 is accrued on the notes payable.
4. Supplies on hand total $750.
5. Insurance expires at the rate of $300 per month.

**Instructions**

Prepare the adjusting entries at March 31, assuming that adjusting entries are made **quarterly**. Additional accounts are Depreciation Expense, Insurance Expense, Interest Payable, and Supplies Expense.

*Prepare adjusting entries.*

**E3.8 (LO 2, 3)** Lorena Manzone, D.D.S., opened a dental practice on January 1, 2020. During the first month of operations, the following transactions occurred.

1. Performed services for patients who had dental plan insurance. At January 31, $785 of such services were performed but not yet recorded.
2. Utility expenses incurred but not paid prior to January 31 totaled $650.
3. Purchased dental equipment on January 1 for $80,000, paying $30,000 in cash and signing a $50,000, 3-year note payable. The equipment depreciates $400 per month. Interest is $500 per month.
4. Purchased a one-year malpractice insurance policy on January 1 for $24,000.
5. Purchased $1,600 of dental supplies. On January 31, determined that $400 of supplies were on hand.

**Instructions**

Prepare the adjusting entries on January 31. Account titles are Accumulated Depreciation—Equipment, Depreciation Expense, Service Revenue, Accounts Receivable, Insurance Expense, Interest Expense, Interest Payable, Prepaid Insurance, Supplies, Supplies Expense, Utilities Expense, and Utilities Payable.

*Prepare adjusting entries.*

**E3.9 (LO 2, 3)** The trial balance for Pioneer Advertising is shown in Illustration 3.3. Instead of the adjusting entries shown in the textbook at October 31, assume the following adjustment data.

1. Supplies on hand at October 31 total $500.
2. Expired insurance for the month is $120.
3. Depreciation for the month is $50.
4. Services related to unearned service revenue in October worth $600 were performed.
5. Services performed but not recorded at October 31 are $360.
6. Interest accrued at October 31 is $95.
7. Accrued salaries at October 31 are $1,625.

**Instructions**

Prepare the adjusting entries for the items above.

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**E3.10 (LO 1, 2, 3, 4)** **Financial Statement** The income statement of Lundeen Co. for the month of July shows net income of $1,400 based on Service Revenue $5,500, Salaries and Wages Expense $2,300, Supplies Expense $1,200, and Utilities Expense $600. In reviewing the statement, you discover the following.

*Prepare correct income statement.*

Excel

1. Insurance expired during July of $500 was omitted.
2. Supplies expense includes $250 of supplies that are still on hand at July 31.
3. Depreciation on equipment of $150 was omitted.
4. Accrued but unpaid salaries and wages at July 31 of $400 were not included.
5. Services performed but unrecorded totaled $650.

### Instructions

Prepare a correct income statement for July 2020.

**E3.11 (LO 1, 2, 3, 4)** A partial adjusted trial balance of Frangesch Company at January 31, 2020, shows the following.

*Analyze adjusted data.*

Excel

**Frangesch Company**
**Adjusted Trial Balance**
**January 31, 2020**

| | Debit | Credit |
|---|---|---|
| Supplies | $ 850 | |
| Prepaid Insurance | 2,400 | |
| Salaries and Wages Payable | | $ 920 |
| Unearned Service Revenue | | 750 |
| Supplies Expense | 950 | |
| Insurance Expense | 400 | |
| Salaries and Wages Expense | 2,900 | |
| Service Revenue | | 2,000 |

### Instructions

Answer the following questions, assuming the year begins January 1.

**a.** If the amount in Supplies Expense is the January 31 adjusting entry and $1,000 of supplies was purchased in January, what was the balance in Supplies on January 1?

**b.** If the amount in Insurance Expense is the January 31 adjusting entry and the original insurance premium was for one year, what was the total premium and when was the policy purchased?

**c.** If $3,800 of salaries was paid in January, what was the balance in Salaries and Wages Payable at December 31, 2019?

**E3.12 (LO 2, 3)** Selected accounts of Shannon Company are shown as follows.

*Journalize basic transactions and adjusting entries.*

**Supplies Expense**

| | | | |
|---|---|---|---|
| 7/31 | 900 | | |

**Supplies**

| | | | |
|---|---|---|---|
| 7/1 Bal. | 1,100 | 7/31 | 900 |
| 7/10 | 650 | | |

**Salaries and Wages Payable**

| | | | |
|---|---|---|---|
| | | 7/31 | 1,200 |

**Accounts Receivable**

| | | | |
|---|---|---|---|
| 7/31 | 500 | | |

**Unearned Service Revenue**

| | | | |
|---|---|---|---|
| 7/31 | 1,150 | 7/1 Bal. | 1,500 |
| | | 7/20 | 1,000 |

**Salaries and Wages Expense**

| | | | |
|---|---|---|---|
| 7/15 | 1,200 | | |
| 7/31 | 1,200 | | |

**Service Revenue**

| | | | |
|---|---|---|---|
| | | 7/14 | 2,200 |
| | | 7/31 | 1,150 |
| | | 7/31 | 500 |

### Instructions

After analyzing the accounts, journalize (a) the July transactions and (b) the adjusting entries that were made on July 31. (*Hint:* July transactions were for cash.)

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*Prepare adjusting entries from selected account data.*

**E3.13 (LO 2, 3)** The ledger of Armour Lake Lumber Supply on July 31, 2020, includes the selected accounts below before adjusting entries have been prepared.

| | Debit | Credit |
|---|---|---|
| Notes Payable | | $ 20,000 |
| Supplies | $ 24,000 | |
| Prepaid Rent | 3,600 | |
| Buildings | 250,000 | |
| Accumulated Depreciation—Buildings | | 140,000 |
| Unearned Service Revenue | | 11,500 |

An analysis of the company's accounts shows the following.

1. The notes payable pays interest at a rate of 6% per year.
2. Supplies on hand at the end of the month totaled $18,600.
3. The balance in Prepaid Rent represents 4 months of rent costs.
4. Employees were owed $3,100 related to unpaid salaries and wages.
5. Depreciation on buildings is $6,000 per year.
6. During the month, the company satisfied obligations worth $4,700 related to the Unearned Services Revenue.
7. Unpaid maintenance and repairs costs were $2,300.

### Instructions

Prepare the adjusting entries at July 31 assuming that adjusting entries are made monthly. Use additional accounts as needed.

*Determine effect of adjusting entries.*

**E3.14 (LO 2, 3)** On December 31, 2020, Waters Company prepared an income statement and balance sheet, but failed to take into account three adjusting entries. The balance sheet showed total assets $150,000, total liabilities $70,000, and owner's equity $80,000. The incorrect income statement showed net income of $70,000.

The data for the three adjusting entries were:

1. Salaries and wages amounting to $10,000 for the last 2 days in December were not paid and not recorded. The next payroll will be in January.
2. Rent payments of $8,000 was received for two months in advance on December 1. The entire amount was credited to Unearned Rent Revenue when paid.
3. Depreciation expense for 2020 is $9,000.

### Instructions

Complete the following table to correct the financial statement amounts shown (indicate deductions with parentheses).

| Item | Net Income | Total Assets | Total Liabilities | Owner's Equity |
|---|---|---|---|---|
| Incorrect balances | $70,000 | $150,000 | $70,000 | $80,000 |
| Effects of: | | | | |
| Salaries and Wages | _____ | _____ | _____ | _____ |
| Rent Revenue | _____ | _____ | _____ | _____ |
| Depreciation | _____ | _____ | _____ | _____ |
| Correct balances | _____ | _____ | _____ | _____ |

*Prepare and post transaction and adjusting entries for prepayments.*

**E3.15 (LO 2)** Action Quest Games Co. adjusts its accounts annually. The following information is available for the year ended December 31, 2020.

1. Purchased a 1-year insurance policy on June 1 for $1,800 cash.
2. Paid $6,500 on August 31 for 5 months' rent in advance.
3. On September 4, received $3,600 cash in advance from a company to sponsor a game each month for a total of 9 months for the most improved students at a local school.
4. Signed a contract for cleaning services starting December 1 for $1,000 per month. Paid for the first 2 months on November 30. (*Hint:* Use the account Prepaid Cleaning to record prepayments.)
5. On December 5, received $1,500 in advance from a gaming club. Determined that on December 31, $475 of these games had not yet been played.

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### Instructions

**a.** For each of the above transactions, prepare the journal entry to record the initial transaction.

**b.** For each of the above transactions, prepare the adjusting journal entry that is required on December 31, (*Hint:* Use the account Service Revenue for item 3 and Repairs and Maintenance Expense for item 4.)

**c.** Post the journal entries in parts (a) and (b) to T-accounts and determine the final balance in each account balance. (*Note:* Posting to the Cash account is not required.)

**E3.16 (LO 3)** Greenock Company has the following information available for accruals for the year ended December 31, 2020. The company adjusts its accounts annually.

*Prepare adjusting and subsequent entries for accruals.*

1. The December utility bill for $425 was unrecorded on December 31. Greenock paid the bill on January 11.
2. Greenock is open 7 days a week and employees are paid a total of $3,500 every Monday for a 7-day (Monday–Sunday) workweek. December 31 is a Thursday, so employees will have worked 4 days (Monday, December 28–Thursday, December 31) that they have not been paid for by year-end. Employees will be paid next on January 4.
3. Greenock signed a $48,000, 5% bank loan on November 1, 2019, due in 2 years. Interest is payable on the first day of each following month.
4. Greenock receives a fee from Pizza Shop next door for all pizzas sold to customers using Greenock's facility. The amount owed for December is $300, which Pizza Shop will pay on January 4. (*Hint:* Use the Service Revenue account.)
5. Greenock rented some of its unused warehouse space to a client for $6,000 a month, payable the first day of the following month. It received the rent for the month of December on January 2.

### Instructions

**a.** For each situation, prepare the adjusting entry required at December 31. (Round all calculations to the nearest dollar.)

**b.** For each situation, prepare the journal entry to record the subsequent cash transaction in 2021.

**E3.17 (LO 2, 3, 4)** The trial balances before and after adjustment for Renfro Company at the end of its fiscal year are presented below.

*Prepare adjusting entries from analysis of trial balances.*

**Renfro Company**
**Trial Balance**
**August 31, 2020**

| | Before Adjustment | | After Adjustment | |
|---|---|---|---|---|
| | **Dr.** | **Cr.** | **Dr.** | **Cr.** |
| Cash | $10,400 | | $10,400 | |
| Accounts Receivable | 8,800 | | 11,200 | |
| Supplies | 2,300 | | 700 | |
| Prepaid Insurance | 4,000 | | 2,500 | |
| Equipment | 14,000 | | 14,000 | |
| Accumulated Depreciation—Equipment | | $ 3,600 | | $ 4,500 |
| Accounts Payable | | 5,800 | | 5,800 |
| Salaries and Wages Payable | | –0– | | 1,100 |
| Unearned Rent Revenue | | 1,500 | | 400 |
| Owner's Capital | | 15,600 | | 15,600 |
| Service Revenue | | 34,000 | | 36,400 |
| Rent Revenue | | 11,000 | | 12,100 |
| Salaries and Wages Expense | 17,000 | | 18,100 | |
| Supplies Expense | –0– | | 1,600 | |
| Rent Expense | 15,000 | | 15,000 | |
| Insurance Expense | –0– | | 1,500 | |
| Depreciation Expense | –0– | | 900 | |
| | $71,500 | $71,500 | $75,900 | $75,900 |

### Instructions

Prepare the adjusting entries that were made.

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*Prepare financial statements from adjusted trial balance.*

**E3.18 (LO 4)** **Financial Statement** The adjusted trial balance for Renfro Company is given in E3.17.

**Instructions**

Prepare the income and owner's equity statements for the year and the balance sheet at August 31.

*Record transactions on accrual basis; convert revenue to cash receipts.*

**E3.19 (LO 2, 3)** The following data are taken from the comparative balance sheets of Bundies Billiards Club, which prepares its financial statements using the accrual basis of accounting.

| December 31 | 2020 | 2019 |
|---|---|---|
| Accounts receivable from members | $16,000 | $ 8,000 |
| Unearned service revenue | 17,000 | 25,000 |

Members are billed based upon their use of the club's facilities. Unearned service revenues arise from the sale of gift certificates, which members can apply to their future use of club facilities. The 2020 income statement for the club showed that service revenue of $161,000 was earned during the year.

**Instructions**

(*Hint:* You will probably find it helpful to use T-accounts to analyze these data.)

**a.** Prepare journal entries for each of the following events that took place during 2020.

1. Accounts receivable from 2019 were all collected.
2. Gift certificates outstanding at the end of 2019 were all redeemed.
3. An additional $38,000 worth of gift certificates were sold during 2020. A portion of these was used by the recipients during the year; the remainder was still outstanding at the end of 2020.
4. Services performed for members for 2020 were billed to members.
5. Accounts receivable for 2020 (i.e., those billed in item [4] above) were partially collected.

**b.** Determine the amount of cash received by the club, with respect to member services, during 2020.

*Journalize adjusting entries.*

***E3.20 (LO 5)** Bob Zeller Company has the following balances in selected accounts on December 31, 2020.

| | |
|---|---|
| Service Revenue | $40,000 |
| Insurance Expense | 2,400 |
| Supplies Expense | 2,450 |

All the accounts have normal balances. Bob Zeller Company debits prepayments to expense accounts when paid, and credits unearned revenues to revenue accounts when received. The following information below has been gathered at December 31, 2020.

1. Bob Zeller Company paid $2,400 for 12 months of insurance coverage on June 1, 2020.
2. On December 1, 2020, Bob Zeller Company collected $40,000 for consulting services to be performed from December 1, 2020, through March 31, 2021.
3. A count of supplies on December 31, 2020, indicates that supplies of $600 are on hand.

**Instructions**

Prepare the adjusting entries needed at December 31, 2020.

*Journalize transactions and adjusting entries.*

***E3.21 (LO 5)** At Sekon Company, prepayments are debited to expense when paid, and unearned revenues are credited to revenue when cash is received. During January of the current year, the following transactions occurred.

| | | |
|---|---|---|
| Jan. | 2 | Paid $1,920 for fire insurance protection for the year. |
| | 10 | Paid $1,700 for supplies. |
| | 15 | Received $6,100 for services to be performed in the future. |

On January 31, it is determined that $2,100 of the services were performed and that there are $650 of supplies on hand.

**Instructions**

**a.** Journalize and post the January transactions. (Use T-accounts.)

**b.** Journalize and post the adjusting entries at January 31.

**c.** Determine the ending balance in each of the accounts.

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*E3.22 (LO 6) Presented below are the assumptions and principles discussed in this chapter.

*Identify accounting assumptions and principles.*

1. Full disclosure principle.
2. Going concern assumption.
3. Monetary unit assumption.
4. Time period assumption.
5. Historical cost principle.
6. Economic entity assumption.

**Instructions**

Identify by number the accounting assumption or principle that is described below. Do not use a number more than once.

_____ **a.** Is the rationale for why plant assets are not reported at liquidation value. (*Note:* Do not use the historical cost principle.)

_____ **b.** Indicates that personal and business recordkeeping should be separately maintained.

_____ **c.** Assumes that the monetary unit is the "measuring stick" used to report on financial performance.

_____ **d.** Separates financial information into time periods for reporting purposes.

_____ **e.** Measurement basis used when a reliable estimate of fair value is not available.

_____ **f.** Dictates that companies should disclose all circumstances and events that make a difference to financial statement users.

*E3.23 (LO 6) Weber Co. had three major business transactions during 2020.

*Identify the assumption or principle that has been violated.*

**a.** Reported at its fair value of $260,000 merchandise inventory with a cost of $208,000.

**b.** The president of Weber Co., Austin Weber, purchased a truck for personal use and charged it to his expense account.

**c.** Weber Co. wanted to make its 2020 income look better, so it added 2 more weeks to the year (a 54-week year). Previous years were 52 weeks.

**Instructions**

In each situation, identify the assumption or principle that has been violated, if any, and discuss what the company should have done.

*E3.24 (LO 6) The following characteristics, assumptions, principles, or constraint guide the FASB when it creates accounting standards.

*Identity financial accounting concepts and principles.*

| | |
|---|---|
| Relevance | Expense recognition principle |
| Faithful representation | Time period assumption |
| Comparability | Going concern assumption |
| Consistency | Historical cost principle |
| Monetary unit assumption | Full disclosure principle |
| Economic entity assumption | Materiality |

Match each item above with a description below.

1. _____ Ability to easily evaluate one company's results relative to another's.
2. _____ Requirement that a company will continue to operate for the foreseeable future.
3. _____ The judgment concerning whether an item's size is large enough to matter to decision-makers.
4. _____ The reporting of all information that would make a difference to financial statement users.
5. _____ The practice of preparing financial statements at regular intervals.
6. _____ The quality of information that indicates the information makes a difference in a decision.
7. _____ A belief that items should be reported on the balance sheet at the price that was paid to acquire them.
8. _____ A company's use of the same accounting principles and methods from year to year.
9. _____ Tracing accounting events to particular companies.
10. _____ The desire to minimize bias in financial statements.
11. _____ Reporting only those things that can be measured in monetary units.
12. _____ Dictates that efforts (expenses) be recognized in the period in which a company generates results (revenues).

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*Comment on the objective and qualitative characteristics of accounting information.*

***E3.25 (LO 6)** Writing Speyeware International Inc., headquartered in Vancouver, Canada, specializes in Internet safety and computer security products for both the home and commercial markets. In a recent balance sheet, it reported a deficit of US$5,678,288. It has reported only net losses since its inception. In spite of these losses, Speyeware's shares of stock have traded anywhere from a high of $3.70 to a low of $0.32 on the Canadian Venture Exchange.

Speyeware's financial statements have historically been prepared in Canadian dollars. Recently, the company adopted the U.S. dollar as its reporting currency.

**Instructions**

**a.** What is the objective of financial reporting? How does this objective meet or not meet Speyeware's investors' needs?

**b.** Why would investors want to buy Speyeware's shares if the company has consistently reported losses over the last few years? Include in your answer an assessment of the relevance of the information reported on Speyeware's financial statements.

**c.** Comment on how the change in reporting information from Canadian dollars to U.S. dollars likely affected the readers of Speyeware's financial statements. Include in your answer an assessment of the comparability of the information.

*Comment on the objective and qualitative characteristics of financial reporting.*

***E3.26 (LO 6)** Writing A friend of yours, Mindy Gare, recently completed an undergraduate degree in science and has just started working with a biotechnology company. Mindy tells you that the owners of the business are trying to secure new sources of financing which are needed in order for the company to proceed with development of a new healthcare product. Mindy said that her boss told her that the company must put together a report to present to potential investors.

Mindy thought that the company should include in this package the detailed scientific findings related to the Phase I clinical trials for this product. She said, "I know that the biotech industry sometimes has only a 10% success rate with new products, but if we report all the scientific findings, everyone will see what a sure success this is going to be! The president was talking about the importance of following some set of accounting principles. Why do we need to look at some accounting rules? What they need to realize is that we have scientific results that are quite encouraging, some of the most talented employees around, and the start of some really great customer relationships. We haven't made any sales yet, but we will. We just need the funds to get through all the clinical testing and get government approval for our product. Then these investors will be quite happy that they bought in to our company early!"

**Instructions**

**a.** What is accounting information?

**b.** Comment on how Mindy's suggestions for what should be reported to prospective investors conforms to the qualitative characteristics of accounting information. Do you think that the things that Mindy wants to include in the information for investors will conform to financial reporting guidelines?

## Problems: Set A

*Prepare adjusting entries, post to ledger accounts, and prepare an adjusted trial balance.*

**P3.1A (LO 2, 3, 4)** Logan Krause started her own consulting firm, Krause Consulting, on May 1, 2020. The trial balance at May 31 is as follows.

**Krause Consulting**
**Trial Balance**
**May 31, 2020**

| Account Number | | Debit | Credit |
|---|---|---|---|
| 101 | Cash | $ 4,500 | |
| 112 | Accounts Receivable | 6,000 | |
| 126 | Supplies | 1,900 | |
| 130 | Prepaid Insurance | 3,600 | |
| 149 | Equipment | 11,400 | |
| 201 | Accounts Payable | | $ 4,500 |
| 209 | Unearned Service Revenue | | 2,000 |
| 301 | Owner's Capital | | 18,700 |
| 400 | Service Revenue | | 9,500 |
| 726 | Salaries and Wages Expense | 6,400 | |
| 729 | Rent Expense | 900 | |
| | | $34,700 | $34,700 |

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In addition to those accounts listed on the trial balance, the chart of accounts for Krause Consulting also contains the following accounts and account numbers: No. 150 Accumulated Depreciation—Equipment, No. 212 Salaries and Wages Payable, No. 631 Supplies Expense, No. 717 Depreciation Expense, No. 722 Insurance Expense, and No. 732 Utilities Expense.

Other data:

1. $900 of supplies have been used during the month.
2. Utilities expense incurred but not paid on May 31, 2020, $250.
3. The insurance policy is for 2 years.
4. $400 of the balance in the unearned service revenue account remains unearned at the end of the month.
5. May 31 is a Wednesday, and employees are paid on Fridays. Krause Consulting has two employees, who are paid $920 each for a 5-day work week.
6. The office furniture has a 5-year life with no salvage value. It is being depreciated at $190 per month for 60 months.
7. Invoices representing $1,700 of services performed during the month have not been recorded as of May 31.

### Instructions

**a.** Prepare the adjusting entries for the month of May. Use J4 as the page number for your journal.

**b.** Post the adjusting entries to the ledger accounts. Enter the totals from the trial balance as beginning account balances and place a check mark in the posting reference column.

**c.** Prepare an adjusted trial balance at May 31, 2020.

c. Adj. trial balance $37,944

**P3.2A (LO 2, 3, 4)** **Financial Statement** Hank's Hotel opened for business on May 1, 2020. Its trial balance before adjustment on May 31 is as follows.

*Prepare adjusting entries, post, and prepare adjusted trial balance and financial statements.*

GLS

**Hank's Hotel**
**Trial Balance**
**May 31, 2020**

| Account Number | | Debit | Credit |
|---|---|---|---|
| 101 | Cash | $ 3,400 | |
| 126 | Supplies | 2,080 | |
| 130 | Prepaid Insurance | 2,400 | |
| 140 | Land | 12,000 | |
| 141 | Buildings | 60,000 | |
| 149 | Equipment | 15,000 | |
| 201 | Accounts Payable | | $ 4,700 |
| 208 | Unearned Rent Revenue | | 3,300 |
| 275 | Mortgage Payable | | 40,000 |
| 301 | Owner's Capital | | 41,380 |
| 429 | Rent Revenue | | 10,300 |
| 610 | Advertising Expense | 600 | |
| 726 | Salaries and Wages Expense | 3,300 | |
| 732 | Utilities Expense | 900 | |
| | | $99,680 | $99,680 |

In addition to those accounts listed on the trial balance, the chart of accounts for Hank's Hotel also contains the following accounts and account numbers: No. 142 Accumulated Depreciation—Buildings, No. 150 Accumulated Depreciation—Equipment, No. 212 Salaries and Wages Payable, No. 230 Interest Payable, No. 619 Depreciation Expense, No. 631 Supplies Expense, No. 718 Interest Expense, and No. 722 Insurance Expense.

Other data:

1. Prepaid insurance is a 1-year policy starting May 1, 2020.
2. A count of supplies shows $750 of unused supplies on May 31.
3. Annual depreciation is $3,600 on the buildings and $1,500 on equipment.
4. The mortgage interest rate is 6%. (The mortgage was taken out on May 1.)
5. Two-thirds of the unearned rent revenue has been earned.
6. Salaries of $750 are accrued and unpaid at May 31.

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**Instructions**

**a.** Journalize the adjusting entries on May 31.

**b.** Prepare a ledger using the three-column form of account. Enter the trial balance amounts and post the adjusting entries. (Use J1 as the posting reference.)

c. Adj. trial balance $101,055

**c.** Prepare an adjusted trial balance on May 31.

d. Net income $4,795
Ending capital $46,175
Total assets $92,925

**d.** Prepare an income statement and an owner's equity statement for the month of May and a balance sheet at May 31.

*Prepare adjusting entries and financial statements.*

**P3.3A (LO 2, 3, 4)** **Financial Statement** Alena Co. was organized on July 1, 2020. Quarterly financial statements are prepared. The unadjusted and adjusted trial balances as of September 30 are shown below.

**Alena Co.**
**Trial Balance**
**September 30, 2020**

| | Unadjusted | | Adjusted | |
|---|---|---|---|---|
| | **Dr.** | **Cr.** | **Dr.** | **Cr.** |
| Cash | $ 8,700 | | $ 8,700 | |
| Accounts Receivable | 10,400 | | 11,500 | |
| Supplies | 1,500 | | 650 | |
| Prepaid Rent | 2,200 | | 500 | |
| Equipment | 18,000 | | 18,000 | |
| Accumulated Depreciation—Equipment | | $ –0– | | $ 700 |
| Notes Payable | | 10,000 | | 10,000 |
| Accounts Payable | | 2,500 | | 2,500 |
| Salaries and Wages Payable | | –0– | | 725 |
| Interest Payable | | –0– | | 100 |
| Unearned Rent Revenue | | 1,900 | | 450 |
| Owner's Capital | | 22,000 | | 22,000 |
| Owner's Drawings | 1,600 | | 1,600 | |
| Service Revenue | | 16,000 | | 17,100 |
| Rent Revenue | | 1,410 | | 2,860 |
| Salaries and Wages Expense | 8,000 | | 8,725 | |
| Rent Expense | 1,900 | | 3,600 | |
| Depreciation Expense | | | 700 | |
| Supplies Expense | | | 850 | |
| Utilities Expense | 1,510 | | 1,510 | |
| Interest Expense | | | 100 | |
| | $53,810 | $53,810 | $56,435 | $56,435 |

**Instructions**

**a.** Journalize the adjusting entries that were made.

b. Net income $4,475
Ending capital $24,875
Total assets $38,650

**b.** Prepare an income statement and an owner's equity statement for the 3 months ending September 30 and a balance sheet at September 30.

**c.** If the note bears interest at 12%, how many months has it been outstanding?

*Prepare adjusting entries.*

**P3.4A (LO 2, 3)** A review of the ledger of Gina Company at December 31, 2020, produces the following data pertaining to the preparation of annual adjusting entries.

1. Insurance expense $4,840

**1.** Prepaid Insurance $10,440. The company has separate insurance policies on its buildings and its motor vehicles. Policy B4564 on the building was purchased on April 1, 2019, for $7,920. The policy has a term of 3 years. Policy A2958 on the vehicles was purchased on January 1, 2020, for $4,400. This policy has a term of 2 years.

2. Rent revenue $75,500

**2.** Unearned Rent Revenue $429,000. The company began subleasing office space in its new building on November 1. At December 31, the company had the following rental contracts that are paid in full for the entire term of the lease.

| Date | Term (in months) | Monthly Rent | Number of Leases |
|---|---|---|---|
| Nov. 1 | 9 | $5,000 | 5 |
| Dec. 1 | 6 | $8,500 | 3 |

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3. Notes Payable $120,000. This balance consists of a note for 9 months at an annual interest rate of 6%, dated November 1.
4. Salaries and Wages Payable $0. There are eight salaried employees. Salaries are paid every Friday for the current week. Five employees receive a salary of $700 each per week, and three employees earn $500 each per week. Assume December 31 is a Tuesday. Employees do not work weekends. All employees worked the last 2 days of December.

3. Interest expense $1,200

4. Salaries and wages expense $2,000

### Instructions

Prepare the adjusting entries at December 31, 2020.

**P3.5A (LO 2, 3, 4) Financial Statement** On November 1, 2020, the account balances of Hamm Equipment Repair were as follows.

*Journalize transactions and follow through accounting cycle to preparation of financial statements.*

GLS

| No. | | Debit | No. | | Credit |
|---|---|---|---|---|---|
| 101 | Cash | $ 2,400 | 154 | Accumulated Depreciation—Equipment | $ 2,000 |
| 112 | Accounts Receivable | 4,250 | 201 | Accounts Payable | 2,600 |
| 126 | Supplies | 1,800 | 209 | Unearned Service Revenue | 1,200 |
| 153 | Equipment | 12,000 | 212 | Salaries and Wages Payable | 700 |
| | | | 301 | Owner's Capital | 13,950 |
| | | $20,450 | | | $20,450 |

During November, the following summary transactions were completed.

| | | |
|---|---|---|
| Nov. | 8 | Paid $1,700 for salaries due employees, of which $700 is for October salaries. |
| | 10 | Received $3,620 cash from customers on account. |
| | 12 | Received $3,100 cash for services performed in November. |
| | 15 | Purchased equipment on account $2,000. |
| | 17 | Purchased supplies on account $700. |
| | 20 | Paid creditors on account $2,700. |
| | 22 | Paid November rent $400. |
| | 25 | Paid salaries $1,700. |
| | 27 | Performed services on account and billed customers for these services $2,200. |
| | 29 | Received $600 from customers for future service. |

Adjustment data consist of:

1. Supplies on hand $1,400.
2. Accrued salaries payable $350.
3. Depreciation for the month is $200.
4. Services related to unearned service revenue of $1,220 were performed.

### Instructions

**a.** Enter the November 1 balances in the ledger accounts.

**b.** Journalize the November transactions.

**c.** Post to the ledger accounts. Use J1 for the posting reference. Use the following additional accounts: No. 407 Service Revenue, No. 615 Depreciation Expense, No. 631 Supplies Expense, No. 726 Salaries and Wages Expense, and No. 729 Rent Expense.

**d.** Prepare a trial balance at November 30.

**e.** Journalize and post adjusting entries.

**f.** Prepare an adjusted trial balance.

**g.** Prepare an income statement and an owner's equity statement for November and a balance sheet at November 30.

d. Trial balance $25,650

f. Adj. trial balance $26,200

g. Net income $1,770;
Ending capital $15,720
Total assets $19,250

***P3.6A (LO 2, 3, 4, 5) Financial Statement** Gabriel's Graphics Company was organized on January 1, 2020, by Gabriel Mediña. At the end of the first 6 months of operations, the trial balance contained the following accounts.

*Prepare adjusting entries, adjusted trial balance, and financial statements using appendix.*

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| | Debit | | Credit |
|---|---|---|---|
| Cash | $ 8,600 | Notes Payable | $ 20,000 |
| Accounts Receivable | 14,000 | Accounts Payable | 9,000 |
| Equipment | 45,000 | Owner's Capital | 22,000 |
| Insurance Expense | 2,700 | Sales Revenue | 52,100 |
| Salaries and Wages Expense | 30,000 | Service Revenue | 6,000 |
| Supplies Expense | 3,700 | | |
| Advertising Expense | 1,900 | | |
| Rent Expense | 1,500 | | |
| Utilities Expense | 1,700 | | |
| | $109,100 | | $109,100 |

Analysis reveals the following additional data.

1. The $3,700 balance in Supplies Expense represents supplies purchased in January. At June 30, $1,300 of supplies are on hand.
2. The note payable was issued on February 1. It is a 6%, 6-month note.
3. The balance in Insurance Expense is the premium on a one-year policy, dated April 1, 2020.
4. Service revenues are credited to revenue when received. At June 30, services revenue of $1,300 are unearned.
5. Revenue for services performed but unrecorded at June 30 totals $2,000.
6. Depreciation is $2,250 per year.

### Instructions

**a.** Journalize the adjusting entries at June 30. (Assume adjustments are recorded every 6 months.)

b. Adj. trial balance $112,725

**b.** Prepare an adjusted trial balance.

c. Net income $19,000
Ending capital $41,000
Total assets $71,800

**c.** Prepare an income statement and owner's equity statement for the 6 months ended June 30 and a balance sheet at June 30.

## Continuing Case

### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 and 2. Use the information from the previous chapters and follow the instructions below using the general ledger accounts you have already prepared.)

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**CC3** It is the end of November and Natalie has been in touch with her grandmother. Her grandmother asked Natalie how well things went in her first month of business. Natalie, too, would like to know if she has been profitable or not during November. Natalie realizes that in order to determine Cookie Creations' income, she must first make adjustments.

Natalie puts together the following additional information.

1. A count reveals that $35 of baking supplies were used during November.
2. Natalie estimates that all of her baking equipment will have a useful life of 5 years or 60 months. (Assume Natalie decides to record a full month's worth of depreciation, regardless of when the equipment was obtained by the business.)
3. Natalie's grandmother has decided to charge interest of 6% on the note payable extended on November 16. The loan plus interest is to be repaid in 24 months. (Assume that half a month of interest accrued during November.)
4. On November 30, a friend of Natalie's asks her to teach a class at the neighborhood school. Natalie agrees and teaches a group of 35 first-grade students how to make gingerbread cookies. The next

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day, Natalie prepares an invoice for $300 and leaves it with the school principal. The principal says that he will pass the invoice along to the head office, and it will be paid sometime in December.

5. Natalie receives a utilities bill for $45. The bill is for utilities consumed by Natalie's business during November and is due December 15.

### Instructions

Using the information that you have gathered through Chapter 2, and based on the new information above, do the following.

**a.** Prepare and post the adjusting journal entries.

**b.** Prepare an adjusted trial balance.

**c.** Using the adjusted trial balance, calculate Cookie Creations' net income or net loss for the month of November. Do not prepare an income statement.

## Ethics Case

**EC3** Russell Company is a pesticide manufacturer. Its sales declined greatly this year due to the passage of legislation outlawing the sale of several of Russell's chemical pesticides. In the coming year, Russell will have environmentally safe and competitive chemicals to replace these discontinued products. Sales in the next year are expected to greatly exceed any prior year's. The decline in sales and profits appears to be a one-year aberration. But even so, the company president fears a large dip in the current year's profits. He believes that such a dip could cause a significant drop in the market price of Russell's stock and make the company a takeover target.

To avoid this possibility, the company president calls in Zoe Baas, controller, to discuss this period's year-end adjusting entries. He urges her to accrue every possible revenue and to defer as many expenses as possible. He says to Zoe, "We need the revenues this year, and next year can easily absorb expenses deferred from this year. We can't let our stock price be hammered down!" Zoe didn't get around to recording the adjusting entries until January 17, but she dated the entries December 31 as if they were recorded then. Zoe also made every effort to comply with the president's request.

### Instructions

**a.** Who are the stakeholders in this situation?

**b.** What are the ethical considerations of (1) the president's request and (2) Zoe dating the adjusting entries December 31?

**c.** Can Zoe accrue revenues and defer expenses and still be ethical?

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT3.1** The financial statements of **Apple Inc.** are presented in Appendix A at the end of this textbook. The complete annual report, including the notes to the financial statements, is available at the company's website.

### Instructions

**a.** Using the consolidated financial statements and related information, identify items that may result in adjusting entries for prepayments.

**b.** Using the consolidated financial statements and related information, identify items that may result in adjusting entries for accruals.

**c.** What has been the trend since 2013 for net income?

### Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT3.2** **PepsiCo, Inc.**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

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### Instructions

Based on information contained in these financial statements, determine the following for each company.

**a.** Net increase (decrease) in property, plant, and equipment (net) from 2014 to 2015.

**b.** Increase (decrease) in selling, general, and administrative expenses from 2014 to 2015.

**c.** Increase (decrease) in long-term debt (obligations) from 2014 to 2015.

**d.** Increase (decrease) in net income from 2014 to 2015.

**e.** Increase (decrease) in cash and cash equivalents from 2014 to 2015.

## Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT3.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

### Instructions

Based on information contained in these financial statements, determine the following for each company.

**1. a.** Increase (decrease) in interest expense from 2014 to 2015.

**b.** Increase (decrease) in net income from 2014 to 2015.

**c.** Increase (decrease) in cash flow from operations from 2014 to 2015.

**2.** Cash flow from operations and net income for each company is different. What are some possible reasons for these differences?

## Real-World Focus

**CT3.4** No financial decision-maker should ever rely solely on the financial information reported in the annual report to make decisions. It is important to keep abreast of financial news. This activity demonstrates how to search for financial news on the Internet.

### Instructions

Conduct an Internet search and select an article that sounds interesting to you and that would be relevant to an investor in **Wal-Mart**, **Target Corp.**, or **Kmart**.

**a.** What was the source of the article (e.g., Reuters, Businesswire, Prnewswire)?

**b.** Assume that you are a personal financial planner and that one of your clients owns stock in the company. Write a brief memo to your client summarizing the article and explaining the implications of the article for his or her investment.

## Decision-Making Across the Organization

**CT3.5** **Financial Statement** Happy Camper Park was organized on April 1, 2019, by Erica Hatt. Erica is a good manager but a poor accountant. From the trial balance prepared by a part-time bookkeeper, Erica prepared the following income statement for the quarter that ended March 31, 2020.

**Happy Camper Park**
**Income Statement**
**For the Quarter Ended March 31, 2020**

| | | |
|---|---|---|
| Revenues | | |
| Rent revenue | | $90,000 |
| Operating expenses | | |
| Advertising | $ 5,200 | |
| Salaries and wages | 29,800 | |
| Utilities | 900 | |
| Depreciation | 800 | |
| Maintenance and repairs | 4,000 | |
| Total operating expenses | | 40,700 |
| Net income | | $49,300 |

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Erica thought that something was wrong with the statement because net income had never exceeded $20,000 in any one quarter. Knowing that you are an experienced accountant, she asks you to review the income statement and other data.

You first look at the trial balance. In addition to the account balances reported above in the income statement, the ledger contains the following additional selected balances at March 31, 2020.

| | |
|---|---|
| Supplies | $ 6,200 |
| Prepaid Insurance | 7,200 |
| Notes Payable | 12,000 |

You then make inquiries and discover the following.

1. Rent revenues include advanced rentals for summer occupancy $15,000.
2. There were $1,700 of supplies on hand at March 31.
3. Prepaid insurance resulted from the payment of a one-year policy on January 1, 2020.
4. The mail on April 1, 2020, brought the following bills: advertising for week of March 24, $110; repairs made March 10, $260; and utilities, $180.
5. Salaries and wages expense total $300 per day. At March 31, 2 days' salaries and wages have been incurred but not paid.
6. The note payable is a 3-month, 10% note dated January 1, 2020.

### Instructions

With the class divided into groups, answer the following.

**a.** Prepare a correct income statement for the quarter ended March 31, 2020.

**b.** Explain to Erica the generally accepted accounting principles that she did not recognize in preparing her income statement and their effect on her results.

## Communication Activity

**CT3.6** In reviewing the accounts of Terri Kahn Co. at the end of the year, you discover that adjusting entries have not been made.

### Instructions

Write a memo to Terri Kahn, the owner of Terri Kahn Co., that explains the following: the nature and purpose of adjusting entries, why adjusting entries are needed, and the types of adjusting entries that may be made.

## All About You

**CT3.7** Companies must report or disclose in their financial statement information about all liabilities, including potential liabilities related to environmental cleanup. There are many situations in which you will be asked to provide personal financial information about your assets, liabilities, revenue, and expenses. Sometimes you will face difficult decisions regarding what to disclose and how to disclose it.

### Instructions

Suppose that you are putting together a loan application to purchase a home. Based on your income and assets, you qualify for the mortgage loan, but just barely. How would you address each of the following situations in reporting your financial position for the loan application? Provide responses for each of the following situations.

**a.** You signed a guarantee for a bank loan that a friend took out for $25,000. If your friend doesn't pay, you will have to pay. Your friend has made all of the payments so far, and it appears he will be able to pay in the future.

**b.** You were involved in an auto accident in which you were at fault. There is the possibility that you may have to pay as much as $60,000 as part of a settlement. The issue will not be resolved before the bank processes your mortgage request.

**c.** The company for which you work isn't doing very well, and it has recently laid off employees. You are still employed, but it is quite possible that you will lose your job in the next few months.

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### Considering People, Planet, and Profit

**CT3.8** Many companies have potential pollution or environmental-disposal problems—not only for electronic gadgets, but also for the lead paint or asbestos they sold. How do we fit these issues into the accounting equation? Are these costs and related liabilities that companies should report?

**YES:** As more states impose laws holding companies responsible, and as more courts levy pollution-related fines, it becomes increasingly likely that companies will have to pay large amounts in the future.

**NO:** The amounts still are too difficult to estimate. Putting inaccurate estimates on the financial statements reduces their usefulness. Instead, why not charge the costs later, when the actual environmental cleanup or disposal occurs, at which time the company knows the actual cost?

#### Instructions

Write a response indicating your position regarding this situation. Provide support for your view.

### FASB Codification Activity

**CT3.9** If your school has a subscription to the FASB Codification, log in and prepare responses to the following.

#### Instructions

Access the glossary ("Master Glossary") to answer the following.

**a.** What is the definition of revenue?

**b.** What is the definition of compensation?

## A Look at IFRS

**LEARNING OBJECTIVE 7**

Compare the procedures for adjusting entries under GAAP and IFRS.

It is often difficult for companies to determine in what time period they should report particular revenues and expenses. Both the IASB and FASB are working on a joint project to develop a common conceptual framework that will enable companies to better use the same principles to record transactions consistently over time.

### Key Points

Following are the key similarities and differences between GAAP and IFRS as related to accrual accounting.

#### Similarities

- In this chapter, you learned accrual-basis accounting applied under GAAP. Companies applying IFRS also use accrual-basis accounting to ensure that they record transactions that change a company's financial statements in the period in which events occur.
- Similar to GAAP, cash-basis accounting is not in accordance with IFRS.
- IFRS also divides the economic life of companies into artificial time periods. Under both GAAP and IFRS, this is referred to as the **time period assumption**.
- The **general** revenue recognition principle required by GAAP that is used in this textbook is similar to that used under IFRS.
- Revenue recognition fraud is a major issue in U.S. financial reporting. The same situation occurs in other countries, as evidenced by revenue recognition breakdowns at Dutch software company **Baan NV**, Japanese electronics giant **NEC**, and Dutch grocer **Ahold NV**.

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**Differences**

- Under IFRS, revaluation (using fair value) of items such as land and buildings is permitted. IFRS allows depreciation based on revaluation of assets, which is not permitted under GAAP.
- The terminology used for revenues and gains, and expenses and losses, differs somewhat between IFRS and GAAP. For example, income under IFRS includes both revenues, which arise during the normal course of operating activities, and gains, which arise from activities outside of the normal sales of goods and services. The term income is not used this way under GAAP. Instead, under GAAP income refers to the net difference between revenues and expenses.
- Under IFRS, expenses include both those costs incurred in the normal course of operations as well as losses that are not part of normal operations. This is in contrast to GAAP, which defines each separately.

### Looking to the Future

The IASB and FASB are completing a joint project on revenue recognition. The purpose of this project is to develop comprehensive guidance on when to recognize revenue. It is hoped that this approach will lead to more consistent accounting in this area.

## IFRS Practice

### IFRS Self-Test Questions

1. IFRS:
   - **a.** uses accrual accounting.
   - **b.** uses cash-basis accounting.
   - **c.** allows revenue to be recognized when a customer makes an order.
   - **d.** requires that revenue not be recognized until cash is received.
2. Which of the following statements is **false**?
   - **a.** IFRS employs the time period assumption.
   - **b.** IFRS employs accrual accounting.
   - **c.** IFRS requires that revenues and costs must be capable of being measured reliably.
   - **d.** IFRS uses the cash basis of accounting.
3. As a result of the revenue recognition project by the FASB and IASB:
   - **a.** revenue recognition places more emphasis on when the performance obligation is satisfied.
   - **b.** revenue recognition places more emphasis on when revenue is realized.
   - **c.** revenue recognition places more emphasis on when expenses are incurred.
   - **d.** revenue is no longer recorded unless cash has been received.
4. Which of the following is **false**?
   - **a.** Under IFRS, the term income describes both revenues and gains.
   - **b.** Under IFRS, the term expenses includes losses.
   - **c.** Under IFRS, companies do not engage in the adjusting process.
   - **d.** Under IFRS, revenue recognition fraud is a major issue.
5. Accrual-basis accounting:
   - **a.** is optional under IFRS.
   - **b.** results in companies recording transactions that change a company's financial statements in the period in which events occur.
   - **c.** has been eliminated as a result of the IASB/FASB joint project on revenue recognition.
   - **d.** is not consistent with the IASB conceptual framework.

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## International Financial Reporting Problem: Louis Vuitton

**IFRS3.1** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

### Instructions

Visit Louis Vuitton's corporate website and answer the following questions from Louis Vuitton's 2015 annual report.

**a.** From the notes to the financial statements, how does the company determine the amount of revenue to record at the time of a sale?

**b.** From the notes to the financial statements, how does the company determine the provision for product returns?

**c.** Using the consolidated income statement and consolidated statement of financial position, identify items that may result in adjusting entries for deferrals.

**d.** Using the consolidated income statement, identify two items that may result in adjusting entries for accruals.

### Answers to IFRS Self-Test Questions

**1.** a **2.** d **3.** a **4.** c **5.** b

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# Completing the Accounting Cycle

## Chapter Preview

As the following Feature Story highlights, at **Rhino Foods, Inc.**, financial statements help employees understand what is happening in the business. In Chapter 3, we prepared financial statements directly from the adjusted trial balance. However, with so many details involved in the end-of-period accounting procedures, it is easy to make errors. One way to minimize errors in the records and to simplify the end-of-period procedures is to use a worksheet.

In this chapter, we will explain the role of the worksheet in accounting. We also will study the remaining steps in the accounting cycle, especially the closing process, again using Pioneer Advertising as an example. Then, we will consider correcting entries and classified balance sheets.

## Feature Story

### Everyone Likes to Win

When Ted Castle was a hockey coach at the University of Vermont, his players were self-motivated by their desire to win. Hockey was a game you usually either won or lost. But at **Rhino Foods, Inc.**, a bakery-foods company he founded in Burlington, Vermont, he discovered that manufacturing-line workers were not so self-motivated. Ted thought, what if he turned the food-making business into a game, with rules, strategies, and trophies?

In a game, knowing the score is all-important. Ted felt that only if the employees know the score—know exactly how the business is doing daily, weekly, monthly—could he turn food-making into a game. But Rhino is a closely held, family-owned business, and its financial statements and profits were confidential. Ted wondered, should he open Rhino's books to the employees?

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A consultant put Ted's concerns in perspective when he said, "Imagine you're playing touch football. You play for an hour or two, and the whole time I'm sitting there with a book, keeping score. All of a sudden I blow the whistle, and I say, 'OK, that's it. Everybody go home.' I close my book and walk away. How would you feel?" Ted opened his books and revealed the financial statements to his employees.

The next step was to teach employees the rules and strategies of how to "win" at making food. The first lesson: "Your opponent at Rhino is expenses. You must cut and control expenses." Ted and his staff distilled those lessons into daily scorecards—production reports and income statements—that keep Rhino's employees up-to-date on the game. At noon each day, Ted posts the previous day's results at the entrance to the production room. Everyone checks whether they made or lost money on what they produced the day before. And it's not just an academic exercise: There's a bonus check for each employee at the end of every four-week "game" that meets profitability guidelines.

Rhino has flourished since the first game. Employment has increased from 20 to 130 people, while both revenues and profits have grown dramatically.

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Prepare a worksheet. | • Steps in preparing a worksheet<br>• Preparing financial statements from a worksheet<br>• Preparing adjusting entries from a worksheet | **DO IT! 1** Worksheet |
| **LO 2** Prepare closing entries and a post-closing trial balance. | • Preparing closing entries<br>• Posting closing entries<br>• Preparing a post-closing trial balance | **DO IT! 2** Closing Entries |
| **LO 3** Explain the steps in the accounting cycle and how to prepare correcting entries. | • Summary of the accounting cycle<br>• Reversing entries<br>• Correcting entries | **DO IT! 3** Correcting Entries |
| **LO 4** Identify the sections of a classified balance sheet. | • Current assets<br>• Long-term investments<br>• Property, plant, and equipment<br>• Intangible assets<br>• Current liabilities<br>• Long-term liabilities<br>• Owner's equity | **DO IT! 4** Balance Sheet Classifications |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

# The Worksheet

**LEARNING OBJECTIVE 1**

Prepare a worksheet.

A **worksheet** is a multiple-column form used in the adjustment process and in preparing financial statements. As its name suggests, the worksheet is a working tool. **It is not a**

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**permanent accounting record.** It is neither a journal nor a part of the general ledger. The worksheet is merely a device used in preparing adjusting entries and the financial statements. Companies generally computerize worksheets using an electronic spreadsheet program such as **Microsoft** Excel.

**Illustration 4.1** shows the basic form of a worksheet and the five steps for preparing it. Each step is performed in sequence. **The use of a worksheet is optional.** When a company chooses to use one, it prepares financial statements directly from the worksheet. It enters the adjustments in the worksheet columns and then journalizes and posts the adjustments after it has prepared the financial statements. Thus, worksheets make it possible to provide the financial statements to management and other interested parties at an earlier date.

## Steps in Preparing a Worksheet

We will use the October 31 trial balance and adjustment data of Pioneer Advertising from Chapter 3 to illustrate how to prepare a worksheet. In the following pages, we describe and then demonstrate each step of the process.

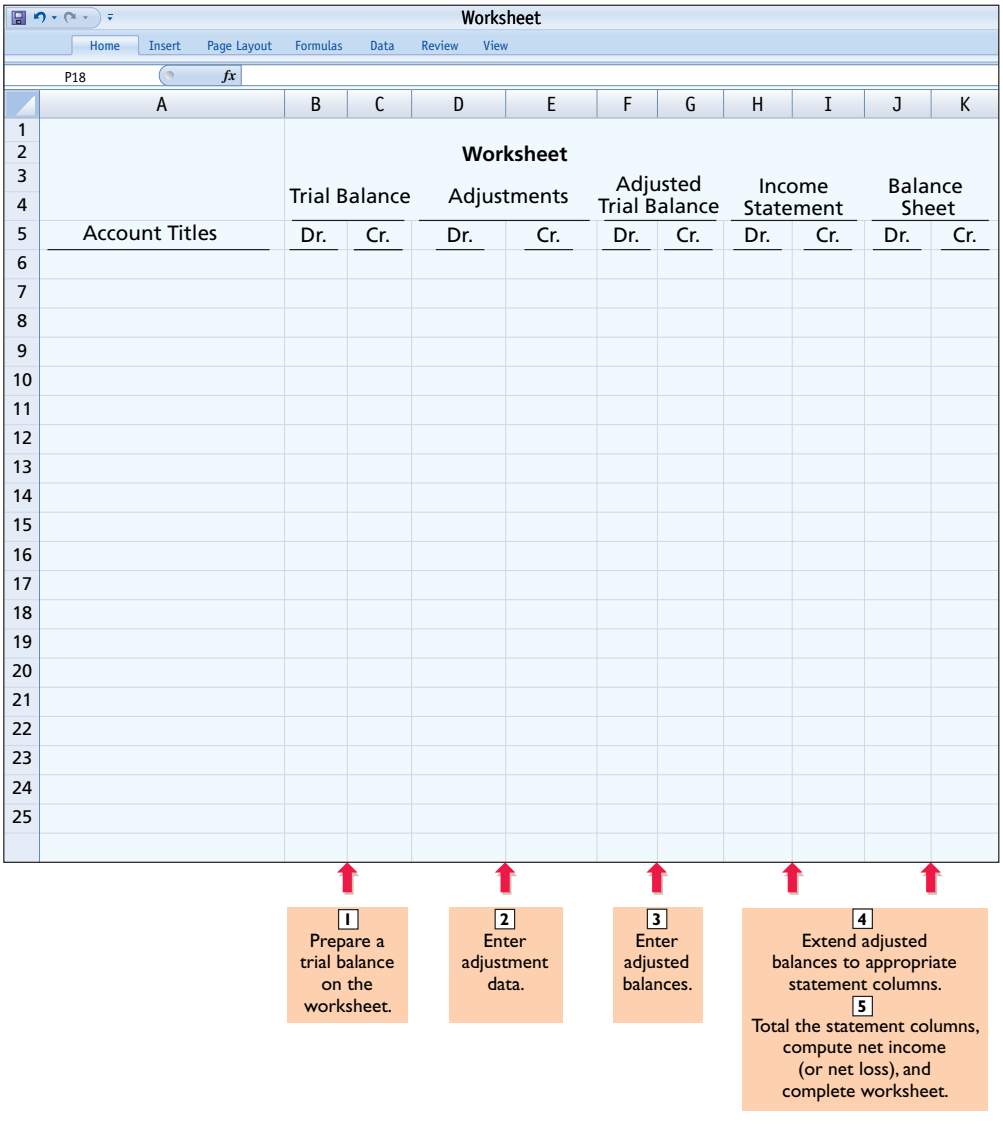


**ILLUSTRATION 4.1**

**Form and procedure for a worksheet**

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## Step 1 Prepare a Trial Balance on the Worksheet

The first step in preparing a worksheet is to enter all ledger accounts with balances in the account titles column and then enter debit and credit amounts from the ledger in the trial balance columns. **Illustration 4.2** shows the worksheet trial balance for Pioneer Advertising. This trial balance is the same one that appears in Illustration 2.31 and Illustration 3.3.

**ILLUSTRATION 4.2** **Preparing a trial balance**

Pioneer Advertising

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P18 fx

**Pioneer Advertising**
**Worksheet**
**For the Month Ended October 31, 2020**

| Account Titles | Trial Balance Dr. | Trial Balance Cr. | Adjustments Dr. | Adjustments Cr. | Adjusted Trial Balance Dr. | Adjusted Trial Balance Cr. | Income Statement Dr. | Income Statement Cr. | Balance Sheet Dr. | Balance Sheet Cr. |
|---|---|---|---|---|---|---|---|---|---|---|
| Cash | 15,200 | | | | | | | | | |
| Supplies | 2,500 | | | | | | | | | |
| Prepaid Insurance | 600 | | | | | | | | | |
| Equipment | 5,000 | | | | | | | | | |
| Notes Payable | | 5,000 | | | | | | | | |
| Accounts Payable | | 2,500 | | | | | | | | |
| Unearned Service Revenue | | 1,200 | | | | | | | | |
| Owner's Capital | | 10,000 | | | | | | | | |
| Owner's Drawings | 500 | | | | | | | | | |
| Service Revenue | | 10,000 | | | | | | | | |
| Salaries and Wages Expense | 4,000 | | | | | | | | | |
| Rent Expense | 900 | | | | | | | | | |
| Totals | 28,700 | 28,700 | | | | | | | | |

Include all accounts with balances from ledger.

Trial balance amounts come directly from ledger accounts.

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## Step 2 Enter the Adjustments in the Adjustments Columns

As shown in **Illustration 4.3**, the second step when using a worksheet is to enter all adjustments in the adjustments columns. In entering the adjustments, use applicable trial balance accounts. If additional accounts are needed, insert them on the lines immediately below the trial balance totals. A different letter identifies the debit and credit for each adjusting entry. The term used to describe this process is **keying**. **Companies do not journalize the adjustments until after they complete the worksheet and prepare the financial statements.**

The adjustments for Pioneer Advertising are the same as the adjustments in Illustration 3.23. They are keyed in the adjustments columns of the worksheet as follows.

**a.** Pioneer debits an additional account, Supplies Expense, $1,500 for the cost of supplies used, and credits Supplies $1,500.

**b.** Pioneer debits an additional account, Insurance Expense, $50 for the insurance that has expired, and credits Prepaid Insurance $50.

**c.** The company needs two additional depreciation accounts. It debits Depreciation Expense $40 for the month's depreciation, and credits Accumulated Depreciation—Equipment $40.

**d.** Pioneer debits Unearned Service Revenue $400 for services performed, and credits Service Revenue $400.

**e.** Pioneer debits an additional account, Accounts Receivable, $200 for services performed but not billed, and credits Service Revenue $200.

**f.** The company needs two additional accounts relating to interest. It debits Interest Expense $50 for accrued interest, and credits Interest Payable $50.

**g.** Pioneer debits Salaries and Wages Expense $1,200 for accrued salaries, and credits an additional account, Salaries and Wages Payable, $1,200.

After Pioneer has entered all the adjustments, the adjustments columns are totaled to prove their equality.

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**ILLUSTRATION 4.3** **Entering the adjustments in the adjustments columns**

Pioneer Advertising

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P18 fx

**Pioneer Advertising**
**Worksheet**
**For the Month Ended October 31, 2020**

| Account Titles | Trial Balance Dr. | Trial Balance Cr. | Adjustments Dr. | Adjustments Cr. | Adjusted Trial Balance Dr. | Adjusted Trial Balance Cr. | Income Statement Dr. | Income Statement Cr. | Balance Sheet Dr. | Balance Sheet Cr. |
|---|---|---|---|---|---|---|---|---|---|---|
| Cash | 15,200 | | | | | | | | | |
| Supplies | 2,500 | | | (a) 1,500 | | | | | | |
| Prepaid Insurance | 600 | | | (b) 50 | | | | | | |
| Equipment | 5,000 | | | | | | | | | |
| Notes Payable | | 5,000 | | | | | | | | |
| Accounts Payable | | 2,500 | | | | | | | | |
| Unearned Service Revenue | | 1,200 | (d) 400 | | | | | | | |
| Owner's Capital | | 10,000 | | | | | | | | |
| Owner's Drawings | 500 | | | | | | | | | |
| Service Revenue | | 10,000 | | (d) 400 | | | | | | |
| | | | | (e) 200 | | | | | | |
| Salaries and Wages Expense | 4,000 | | (g) 1,200 | | | | | | | |
| Rent Expense | 900 | | | | | | | | | |
| Totals | 28,700 | 28,700 | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Supplies Expense | | | (a) 1,500 | | | | | | | |
| Insurance Expense | | | (b) 50 | | | | | | | |
| Accum. Depreciation— | | | | | | | | | | |
| Equipment | | | | (c) 40 | | | | | | |
| Depreciation Expense | | | (c) 40 | | | | | | | |
| Accounts Receivable | | | (e) 200 | | | | | | | |
| Interest Expense | | | (f) 50 | | | | | | | |
| Interest Payable | | | | (f) 50 | | | | | | |
| Salaries and Wages Payable | | | | (g) 1,200 | | | | | | |
| Totals | | | 3,440 | 3,440 | | | | | | |

Add additional accounts as needed to complete the adjustments:
(a) Supplies Used.
(b) Insurance Expired.
(c) Depreciation Expensed.
(d) Service Revenue Recognized.
(e) Service Revenue Accrued.
(f) Interest Accrued.
(g) Salaries Accrued.

Enter adjustment amounts in appropriate columns, and use letters to cross-reference the debit and credit adjustments.

Total adjustments columns and check for equality.

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## Step 3 Enter Adjusted Balances in the Adjusted Trial Balance Columns

As shown in **Illustration 4.4**, Pioneer Advertising next determines the adjusted balance of an account by combining the amounts entered in the first four columns of the worksheet for each account. For example, the Prepaid Insurance account in the trial balance columns has a $600 debit balance and a $50 credit in the adjustments columns. The result is a $550 debit balance recorded in the adjusted trial balance columns. **For each account, the amount in the adjusted trial balance columns is the balance that will appear in the ledger after journalizing and posting the adjusting entries.** The balances in these columns are the same as those in the adjusted trial balance in Illustration 3.25.

After Pioneer has entered all account balances in the adjusted trial balance columns, the columns are totaled to prove their equality. If the column totals do not agree, the financial statement columns will not balance and the financial statements will be incorrect.

**ILLUSTRATION 4.4** **Entering adjusted balances in the adjusted trial balance columns**

Pioneer Advertising

Home | Insert | Page Layout | Formulas | Data | Review | View

P18

**Pioneer Advertising**
**Worksheet**
**For the Month Ended October 31, 2020**

| Account Titles | Trial Balance Dr. | Trial Balance Cr. | Adjustments Dr. | Adjustments Cr. | Adjusted Trial Balance Dr. | Adjusted Trial Balance Cr. | Income Statement Dr. | Income Statement Cr. | Balance Sheet Dr. | Balance Sheet Cr. |
|---|---|---|---|---|---|---|---|---|---|---|
| Cash | 15,200 | | | | 15,200 | | | | | |
| Supplies | 2,500 | | | (a) 1,500 | 1,000 | | | | | |
| Prepaid Insurance | 600 | | | (b) 50 | 550 | | | | | |
| Equipment | 5,000 | | | | 5,000 | | | | | |
| Notes Payable | | 5,000 | | | | 5,000 | | | | |
| Accounts Payable | | 2,500 | | | | 2,500 | | | | |
| Unearned Service Revenue | | 1,200 | (d) 400 | | | 800 | | | | |
| Owner's Capital | | 10,000 | | | | 10,000 | | | | |
| Owner's Drawings | 500 | | | | 500 | | | | | |
| Service Revenue | | 10,000 | | (d) 400 | | 10,600 | | | | |
| | | | | (e) 200 | | | | | | |
| Salaries and Wages Expense | 4,000 | | (g) 1,200 | | 5,200 | | | | | |
| Rent Expense | 900 | | | | 900 | | | | | |
| Totals | 28,700 | 28,700 | | | | | | | | |
| Supplies Expense | | | (a) 1,500 | | 1,500 | | | | | |
| Insurance Expense | | | (b) 50 | | 50 | | | | | |
| Accum. Depreciation—Equipment | | | | (c) 40 | | 40 | | | | |
| Depreciation Expense | | | (c) 40 | | 40 | | | | | |
| Accounts Receivable | | | (e) 200 | | 200 | | | | | |
| Interest Expense | | | (f) 50 | | 50 | | | | | |
| Interest Payable | | | | (f) 50 | | 50 | | | | |
| Salaries and Wages Payable | | | | (g) 1,200 | | 1,200 | | | | |
| Totals | | | 3,440 | 3,440 | 30,190 | 30,190 | | | | |

Combine trial balance amounts with adjustment amounts to obtain the adjusted trial balance.

Total adjusted trial balance columns and check for equality.

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## Step 4 Extend Adjusted Trial Balance Amounts to Appropriate Financial Statement Columns

**HELPFUL HINT**

**Every adjusted trial balance amount must be extended to one of the four statement columns.**

As shown in **Illustration 4.5**, the fourth step is to extend adjusted trial balance amounts to the income statement and balance sheet columns of the worksheet (see **Helpful Hint**). Pioneer Advertising enters balance sheet accounts in the appropriate balance sheet debit and credit columns. For instance, it enters Cash in the balance sheet debit column, and Notes Payable in the balance sheet credit column. Pioneer extends Accumulated Depreciation—Equipment to the balance sheet credit column. The reason is that accumulated depreciation is a contra asset account with a credit balance.

Because the worksheet does not have columns for the owner's equity statement, Pioneer extends the balance in owner's capital to the balance sheet credit column. In addition, it extends the balance in owner's drawings to the balance sheet debit column because it is an owner's equity account with a debit balance.

The company enters the expense and revenue accounts such as Salaries and Wages Expense and Service Revenue in the appropriate income statement columns.

**ILLUSTRATION 4.5** **Extending the adjusted trial balance amounts to appropriate financial statement columns**

Pioneer Advertising

**Pioneer Advertising**
**Worksheet**
**For the Month Ended October 31, 2020**

| Account Titles | Trial Balance Dr. | Trial Balance Cr. | Adjustments Dr. | Adjustments Cr. | Adjusted Trial Balance Dr. | Adjusted Trial Balance Cr. | Income Statement Dr. | Income Statement Cr. | Balance Sheet Dr. | Balance Sheet Cr. |
|---|---|---|---|---|---|---|---|---|---|---|
| Cash | 15,200 | | | | 15,200 | | | | 15,200 | |
| Supplies | 2,500 | | | (a) 1,500 | 1,000 | | | | 1,000 | |
| Prepaid Insurance | 600 | | | (b) 50 | 550 | | | | 550 | |
| Equipment | 5,000 | | | | 5,000 | | | | 5,000 | |
| Notes Payable | | 5,000 | | | | 5,000 | | | | 5,000 |
| Accounts Payable | | 2,500 | | | | 2,500 | | | | 2,500 |
| Unearned Service Revenue | | 1,200 | (d) 400 | | | 800 | | | | 800 |
| Owner's Capital | | 10,000 | | | | 10,000 | | | | 10,000 |
| Owner's Drawings | 500 | | | | 500 | | | | 500 | |
| Service Revenue | | 10,000 | | (d) 400 | | 10,600 | | 10,600 | | |
| | | | | (e) 200 | | | | | | |
| Salaries and Wages Expense | 4,000 | | (g) 1,200 | | 5,200 | | 5,200 | | | |
| Rent Expense | 900 | | | | 900 | | 900 | | | |
| Totals | 28,700 | 28,700 | | | | | | | | |
| Supplies Expense | | | (a) 1,500 | | 1,500 | | 1,500 | | | |
| Insurance Expense | | | (b) 50 | | 50 | | 50 | | | |
| Accum. Depreciation—Equipment | | | | (c) 40 | | 40 | | | | 40 |
| Depreciation Expense | | | (c) 40 | | 40 | | 40 | | | |
| Accounts Receivable | | | (e) 200 | | 200 | | | | 200 | |
| Interest Expense | | | (f) 50 | | 50 | | 50 | | | |
| Interest Payable | | | | (f) 50 | | 50 | | | | 50 |
| Salaries and Wages Payable | | | | (g) 1,200 | | 1,200 | | | | 1,200 |
| Totals | | | 3,440 | 3,440 | 30,190 | 30,190 | | | | |

Extend all revenue and expense account balances to the income statement columns.

Extend all asset and liability account balances, as well as owner's capital and drawings account balances, to the balance sheet columns.

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## Step 5 Total the Statement Columns, Compute the Net Income (or Net Loss), and Complete the Worksheet

As shown in **Illustration 4.6**, Pioneer Advertising must now total each of the financial statement columns. The net income or loss for the period is the difference between the totals of the two income statement columns. If total credits exceed total debits, the result is net income. In such a case, the company inserts the words "Net Income" in the account titles space. It then enters the amount in the income statement debit column and the balance sheet credit column. **The debit amount balances the income statement columns; the credit amount balances the balance sheet columns.** In addition, the credit in the balance sheet column indicates the increase in owner's equity resulting from net income.

What if total debits in the income statement columns exceed total credits? In that case, Pioneer has a net loss. It enters the amount of the net loss in the income statement credit column and the balance sheet debit column.

After entering the net income or net loss, Pioneer determines new column totals. The totals shown in the debit and credit income statement columns will match. So will the totals shown in the debit and credit balance sheet columns. If either the income statement columns or the balance sheet columns are not equal after the net income or net loss has been entered, there is an error in the worksheet.

**ILLUSTRATION 4.6** **Computing net income or net loss and completing the worksheet**

Pioneer Advertising

**Pioneer Advertising**
**Worksheet**
**For the Month Ended October 31, 2020**

| Account Titles | Trial Balance Dr. | Trial Balance Cr. | Adjustments Dr. | Adjustments Cr. | Adjusted Trial Balance Dr. | Adjusted Trial Balance Cr. | Income Statement Dr. | Income Statement Cr. | Balance Sheet Dr. | Balance Sheet Cr. |
|---|---|---|---|---|---|---|---|---|---|---|
| Cash | 15,200 | | | | 15,200 | | | | 15,200 | |
| Supplies | 2,500 | | | (a) 1,500 | 1,000 | | | | 1,000 | |
| Prepaid Insurance | 600 | | | (b) 50 | 550 | | | | 550 | |
| Equipment | 5,000 | | | | 5,000 | | | | 5,000 | |
| Notes Payable | | 5,000 | | | | 5,000 | | | | 5,000 |
| Accounts Payable | | 2,500 | | | | 2,500 | | | | 2,500 |
| Unearned Service Revenue | | 1,200 | (d) 400 | | | 800 | | | | 800 |
| Owner's Capital | | 10,000 | | | | 10,000 | | | | 10,000 |
| Owner's Drawings | 500 | | | | 500 | | | | 500 | |
| Service Revenue | | 10,000 | | (d) 400 | | 10,600 | | 10,600 | | |
| | | | | (e) 200 | | | | | | |
| Salaries and Wages Expense | 4,000 | | (g) 1,200 | | 5,200 | | 5,200 | | | |
| Rent Expense | 900 | | | | 900 | | 900 | | | |
| Totals | 28,700 | 28,700 | | | | | | | | |
| Supplies Expense | | | (a) 1,500 | | 1,500 | | 1,500 | | | |
| Insurance Expense | | | (b) 50 | | 50 | | 50 | | | |
| Accum. Depreciation—Equipment | | | | (c) 40 | | 40 | | | | 40 |
| Depreciation Expense | | | (c) 40 | | 40 | | 40 | | | |
| Accounts Receivable | | | (e) 200 | | 200 | | | | 200 | |
| Interest Expense | | | (f) 50 | | 50 | | 50 | | | |
| Interest Payable | | | | (f) 50 | | 50 | | | | 50 |
| Salaries and Wages Payable | | | | (g) 1,200 | | 1,200 | | | | 1,200 |
| Totals | | | 3,440 | 3,440 | 30,190 | 30,190 | 7,740 | 10,600 | 22,450 | 19,590 |
| Net Income | | | | | | | 2,860 | | | 2,860 |
| Totals | | | | | | | 10,600 | 10,600 | 22,450 | 22,450 |

The difference between the totals of the two income statement columns determines net income or net loss.

Net income is extended to the credit column of the balance sheet columns. (Net loss would be extended to the debit column.)

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# Preparing Financial Statements from a Worksheet

After a company has completed a worksheet, it has at hand all the data required for preparation of financial statements. The income statement is prepared from the income statement columns. The owner's equity statement and balance sheet are prepared from the balance sheet columns. **Illustration 4.7** shows the financial statements prepared from Pioneer Advertising's

**ILLUSTRATION 4.7**
**Financial statements from a worksheet**

**Pioneer Advertising**
**Income Statement**
**For the Month Ended October 31, 2020**

| | | |
|---|---|---|
| Revenues | | |
| Service revenue | | $10,600 |
| Expenses | | |
| Salaries and wages expense | $5,200 | |
| Supplies expense | 1,500 | |
| Rent expense | 900 | |
| Insurance expense | 50 | |
| Interest expense | 50 | |
| Depreciation expense | 40 | |
| Total expenses | | 7,740 |
| Net income | | $ 2,860 |

**Pioneer Advertising**
**Owner's Equity Statement**
**For the Month Ended October 31, 2020**

| | | |
|---|---|---|
| Owner's capital, October 1 | | $ –0– |
| Add: Investments | $10,000 | |
| Net income | 2,860 | 12,860 |
| | | 12,860 |
| Less: Drawings | | 500 |
| Owner's capital, October 31 | | $12,360 |

**Pioneer Advertising**
**Balance Sheet**
**October 31, 2020**

| | | |
|---|---|---|
| **Assets** | | |
| Cash | | $15,200 |
| Accounts receivable | | 200 |
| Supplies | | 1,000 |
| Prepaid insurance | | 550 |
| Equipment | $5,000 | |
| Less: Accumulated depreciation—equipment | 40 | 4,960 |
| Total assets | | $21,910 |
| **Liabilities and Owner's Equity** | | |
| Liabilities | | |
| Notes payable | $5,000 | |
| Accounts payable | 2,500 | |
| Interest payable | 50 | |
| Unearned service revenue | 800 | |
| Salaries and wages payable | 1,200 | |
| Total liabilities | | $ 9,550 |
| Owner's equity | | |
| Owner's capital | | 12,360 |
| Total liabilities and owner's equity | | $21,910 |

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worksheet. At this point, the company has not journalized or posted adjusting entries. Therefore, ledger balances for some accounts are not the same as the financial statement amounts.

The amount shown for owner's capital on the worksheet is the account balance **before considering drawings and net income (or loss)**. When the owner has made no additional investments of capital during the period, this worksheet amount for owner's capital is the balance at the beginning of the period.

Using a worksheet, companies can prepare financial statements before they journalize and post adjusting entries. **However, the completed worksheet is not a substitute for formal financial statements.** The format of the data in the financial statement columns of the worksheet is not the same as the format of the financial statements. **A worksheet is essentially a working tool of the accountant**; companies do not distribute it to management and other parties.

## Preparing Adjusting Entries from a Worksheet

**A worksheet is not a journal, and it cannot be used as a basis for posting to ledger accounts.** To adjust the accounts, the company must journalize the adjustments and post them to the ledger. **The adjusting entries are prepared from the adjustments columns of the worksheet.** The reference letters in the adjustments columns and the explanations of the adjustments at the bottom of the worksheet help identify the adjusting entries (see **Helpful Hint**). The journalizing and posting of adjusting entries **follows** the preparation of financial statements when a worksheet is used. The adjusting entries on October 31 for Pioneer Advertising are the same as those shown in Illustration 3.23.

**HELPFUL HINT**

**Note that writing the explanation to the adjustment at the bottom of the worksheet is not required.**

### DO IT! 1 | Worksheet

Susan Elbe is preparing a worksheet. Explain to Susan how she should extend the following adjusted trial balance accounts to the financial statement columns of the worksheet.

| | |
|---|---|
| Cash | Owner's Drawings |
| Accumulated Depreciation—Equipment | Service Revenue |
| Accounts Payable | Salaries and Wages Expense |

**ACTION PLAN**

- **Balance sheet: Extend assets to debit column. Extend liabilities to credit column. Extend contra assets to credit column. Extend drawings account to debit column.**
- **Income statement: Extend expenses to debit column. Extend revenues to credit column.**

**Solution**

Income statement debit column—Salaries and Wages Expense
Income statement credit column—Service Revenue
Balance sheet debit column—Cash; Owner's Drawings
Balance sheet credit column—Accumulated Depreciation—Equipment; Accounts Payable

Related exercise material: **BE4.1, BE4.2, BE4.3, DO IT! 4.1, E4.1, E4.2, E4.3, E4.5, and E4.6.**

# Closing the Books

**LEARNING OBJECTIVE 2**

Prepare closing entries and a post-closing trial balance.

ANALYZE → JOURNALIZE → POST → TRIAL BALANCE → ADJUSTING ENTRIES → ADJUSTED TRIAL BALANCE → PREPARE FINANCIAL STATEMENTS → **Journalize and post closing entries** → **Prepare a post-closing trial balance**

At the end of the accounting period, the company makes the accounts ready for the next period. This is called **closing the books**. In closing the books, the company distinguishes between temporary and permanent accounts.

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**ALTERNATIVE TERMINOLOGY**

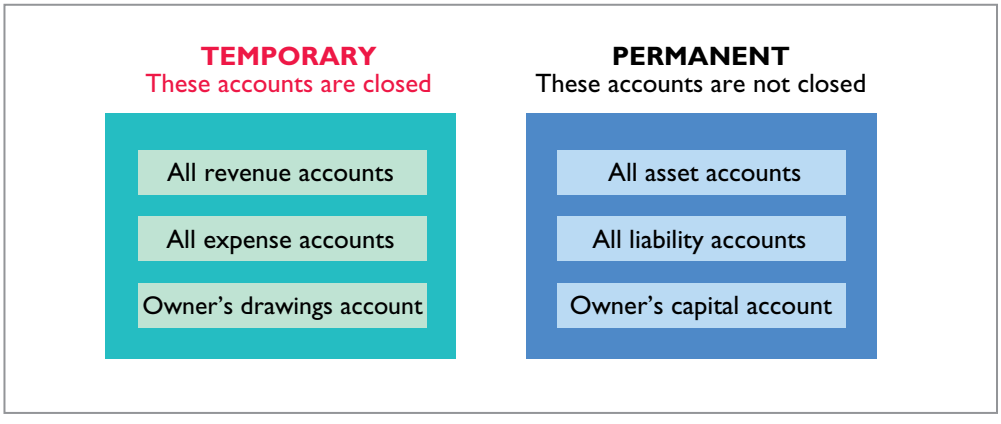
Temporary accounts are sometimes called *nominal accounts*, and permanent accounts are sometimes called *real accounts*.

**Temporary accounts** relate only to a given accounting period. They include all income statement accounts and the owner's drawings account. **The company closes all temporary accounts at the end of the period.**

In contrast, **permanent accounts** relate to one or more future accounting periods. They consist of all balance sheet accounts, including the owner's capital account. **Permanent accounts are not closed from period to period.** Instead, the company carries forward the balances of permanent accounts into the next accounting period. **Illustration 4.8** identifies the accounts in each category (see **Alternative Terminology**).

**ILLUSTRATION 4.8**

**Temporary versus permanent accounts**




## Preparing Closing Entries

At the end of the accounting period, the company transfers temporary account balances to the permanent owner's equity account, Owner's Capital, by means of closing entries.[1]

**Closing entries** formally recognize in the ledger the transfer of net income (or net loss) and owner's drawings to owner's capital. The owner's equity statement shows the results of these entries. **Closing entries also produce a zero balance in each temporary account.** The temporary accounts are then ready to accumulate data in the next accounting period separate from the data of prior periods. Permanent accounts are not closed.

**Journalizing and posting closing entries is a required step in the accounting cycle** (see Illustration 4.15). The company performs this step after it has prepared financial statements. In contrast to the steps in the cycle that you have already studied, companies generally journalize and post closing entries **only at the end of the annual accounting period**. Thus, all temporary accounts will contain data for the entire accounting period.

In preparing closing entries, companies could close each income statement account directly to owner's capital. However, to do so would result in excessive detail in the permanent Owner's Capital account. Instead, companies close the revenue and expense accounts to another temporary account, **Income Summary**, and then transfer the resulting net income or net loss from this account to owner's capital.

Companies **record closing entries in the general journal**. A center caption, Closing Entries, inserted in the journal between the last adjusting entry and the first closing entry, identifies these entries. Then the company posts the closing entries to the ledger accounts.

Companies generally prepare closing entries directly from the adjusted balances in the ledger. They could prepare separate closing entries for each nominal account, but the following four entries accomplish the desired result more efficiently:

1. Debit each revenue account for its balance, and credit Income Summary for total revenues.

[1]We explain closing entries for a partnership and for a corporation in Chapters 12 and 13, respectively.

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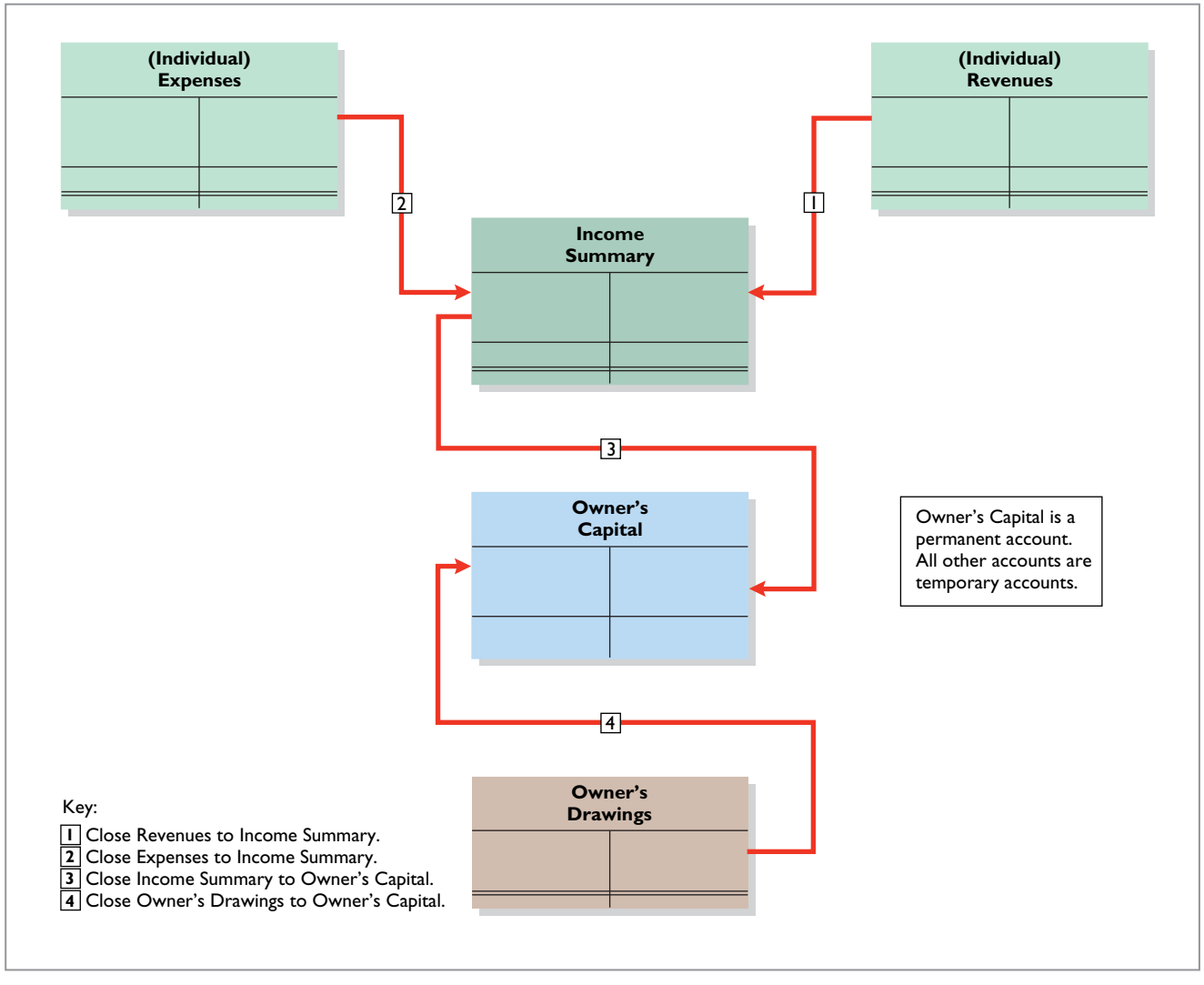
2. Debit Income Summary for total expenses, and credit each expense account for its balance.
3. Debit Income Summary and credit Owner's Capital for the amount of net income.
4. Debit Owner's Capital for the balance in the Owner's Drawings account, and credit Owner's Drawings for the same amount (see **Helpful Hint**).

**HELPFUL HINT**

**Owner's Drawings is closed directly to Owner's Capital and not to Income Summary. Owner's Drawings is not an expense.**

**Illustration 4.9** presents a diagram of the closing process. In it, the boxed numbers refer to the four entries required in the closing process.

**ILLUSTRATION 4.9** **Diagram of closing process—proprietorship**




If there were a net loss (because expenses exceeded revenues), entry 3 in Illustration 4.9 would be reversed: there would be a credit to Income Summary and a debit to Owner's Capital.

## Closing Entries Illustrated

In practice, companies generally prepare closing entries only at the end of the annual accounting period. However, to illustrate the journalizing and posting of closing entries, we will assume that Pioneer Advertising closes its books monthly. **Illustration 4.10** shows the closing entries at October 31. (The numbers in parentheses before each entry correspond to the four entries diagrammed in Illustration 4.9.)

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**ILLUSTRATION 4.10**
**Closing entries journalized**

| GENERAL JOURNAL | | | | J3 |
|---|---|---|---|---|
| **Date** | **Account Titles and Explanation** | **Ref.** | **Debit** | **Credit** |
| | **Closing Entries** | | | |
| 2020 | (1) | | | |
| Oct. 31 | Service Revenue | 400 | 10,600 | |
| | Income Summary | 350 | | 10,600 |
| | **(To close revenue account)** | | | |
| | (2) | | | |
| 31 | Income Summary | 350 | 7,740 | |
| | Supplies Expense | 631 | | 1,500 |
| | Depreciation Expense | 711 | | 40 |
| | Insurance Expense | 722 | | 50 |
| | Salaries and Wages Expense | 726 | | 5,200 |
| | Rent Expense | 729 | | 900 |
| | Interest Expense | 905 | | 50 |
| | **(To close expense accounts)** | | | |
| | (3) | | | |
| 31 | Income Summary | 350 | 2,860 | |
| | Owner's Capital | 301 | | 2,860 |
| | **(To close net income to capital)** | | | |
| | (4) | | | |
| 31 | Owner's Capital | 301 | 500 | |
| | Owner's Drawings | 306 | | 500 |
| | **(To close drawings to capital)** | | | |

Note that the amounts for Income Summary in entries (1) and (2) are the totals of the income statement credit and debit columns, respectively, in the worksheet.

A couple of cautions in preparing closing entries. (1) Avoid unintentionally doubling the revenue and expense balances rather than zeroing them. (2) Do not close Owner's Drawings through the Income Summary account. **Owner's Drawings is not an expense, and it is not a factor in determining net income.**

## Posting Closing Entries

**Illustration 4.11** shows the posting of the closing entries and the underlining (ruling) of the accounts. Note that all temporary accounts have zero balances after posting the closing entries. In addition, notice that the balance in owner's capital (Owner's Capital) represents the total equity of the owner at the end of the accounting period. This balance is shown on the balance sheet and is the ending capital reported on the owner's equity statement, as shown in Illustration 4.7. Pioneer Advertising uses the Income Summary account only in closing. It does not journalize and post entries to this account during the year (see **Helpful Hint**).

**HELPFUL HINT**
**The balance in Income Summary before it is closed must equal the net income or net loss for the period.**

As part of the closing process, Pioneer totals, balances, and double-underlines its temporary accounts—revenues, expenses, and Owner's Drawings, as shown in T-account form in Illustration 4.11. It does not close its permanent accounts—assets, liabilities, and Owner's Capital. Instead, Pioneer draws a single underline beneath the current-period entries for the permanent accounts. The account balance is then entered below the single underline and is carried forward to the next period (for example, see Owner's Capital).

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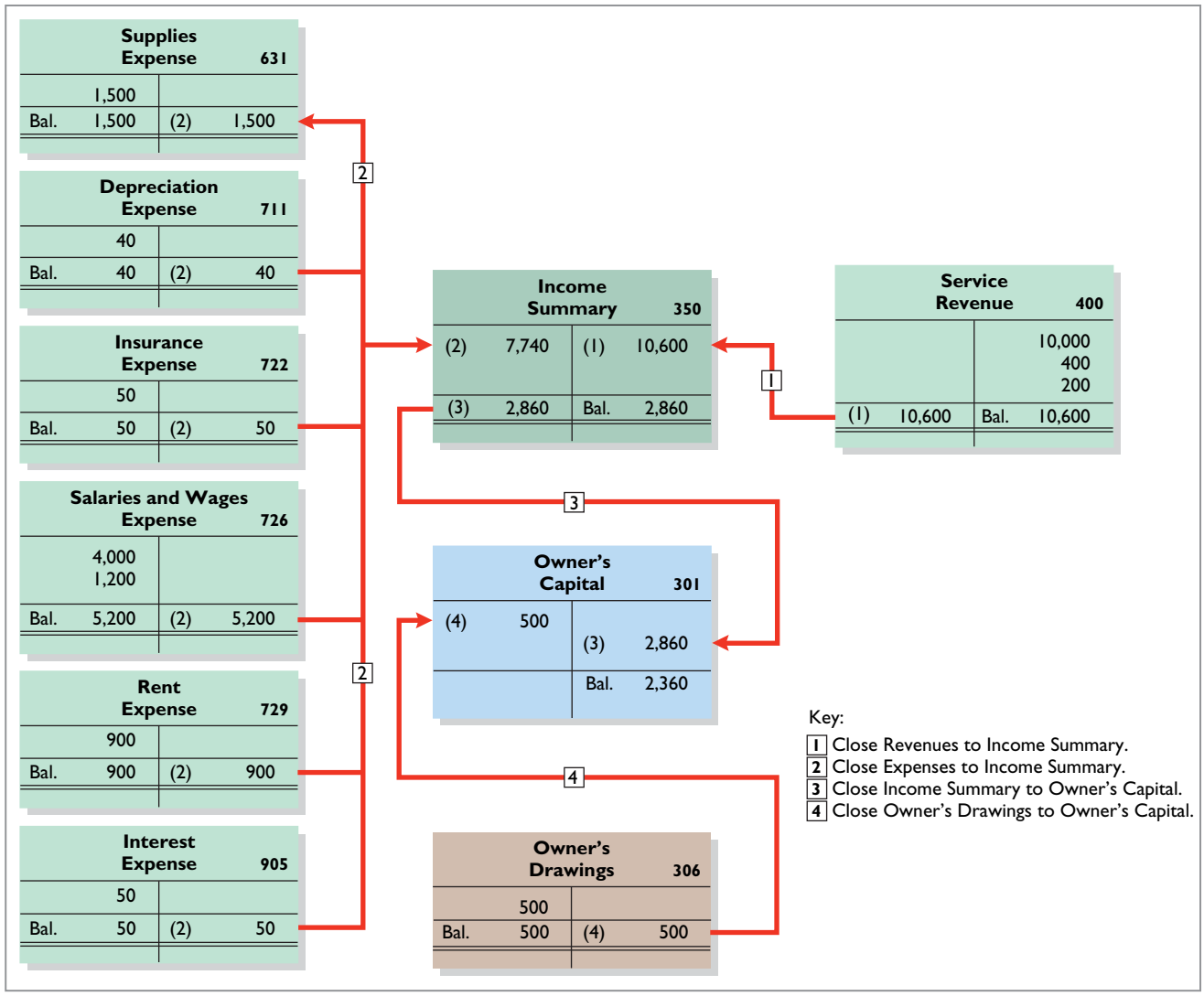
**ILLUSTRATION 4.11** **Posting of closing entries**




## Accounting Across the Organization Cisco Systems

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### Performing the Virtual Close

Technology has dramatically shortened the closing process. Recent surveys have reported that the average company now takes only six to seven days to close, rather than the previous 20 days. But a few companies do much better. **Cisco Systems** can perform a "virtual close"—closing within 24 hours on any day in the quarter. The same is true at **Lockheed Martin Corp.**, which improved its closing time by 85% in just the last few years. Not very long ago, it took 14 to 16 days. Managers at these companies emphasize that this increased speed has not reduced the accuracy and completeness of the data.

This is not just showing off. Knowing exactly where you are financially all of the time allows the company to respond faster than its competitors. It also means that the hundreds of people who used to spend 10 to 20 days a quarter tracking transactions can now be more usefully employed on things such as mining data for business intelligence to find new business opportunities.

**Source:** "Reporting Practices: Few Do It All," *Financial Executive* (November 2003), p. 11.

**Who else benefits from a shorter closing process? (Go to WileyPLUS for this answer and additional questions.)**

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## Preparing a Post-Closing Trial Balance

After Pioneer Advertising has journalized and posted all closing entries, it prepares another trial balance, called a **post-closing trial balance**, from the ledger. The post-closing trial balance lists permanent accounts and their balances after the journalizing and posting of closing entries. The purpose of the post-closing trial balance is **to prove the equality of the permanent account balances carried forward into the next accounting period**. Since all temporary accounts will have zero balances, **the post-closing trial balance will contain only permanent—balance sheet—accounts**.

**Illustration 4.12** shows the post-closing trial balance for Pioneer Advertising.

**ILLUSTRATION 4.12**
**Post-closing trial balance**

**Pioneer Advertising**
**Post-Closing Trial Balance**
**October 31, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $15,200 | |
| Accounts Receivable | 200 | |
| Supplies | 1,000 | |
| Prepaid Insurance | 550 | |
| Equipment | 5,000 | |
| Accumulated Depreciation—Equipment | | $ 40 |
| Notes Payable | | 5,000 |
| Accounts Payable | | 2,500 |
| Unearned Service Revenue | | 800 |
| Salaries and Wages Payable | | 1,200 |
| Interest Payable | | 50 |
| Owner's Capital | | 12,360 |
| | $21,950 | $21,950 |

Pioneer prepares the post-closing trial balance from the permanent accounts in the ledger. **Illustration 4.13** shows the permanent accounts in Pioneer's general ledger.

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**ILLUSTRATION 4.13** General ledger, permanent accounts

(Permanent Accounts Only)

## GENERAL LEDGER

**Cash** — No. 101

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | 10,000 | | 10,000 |
| 2 | | J1 | 1,200 | | 11,200 |
| 3 | | J1 | | 900 | 10,300 |
| 4 | | J1 | | 600 | 9,700 |
| 20 | | J1 | | 500 | 9,200 |
| 26 | | J1 | | 4,000 | 5,200 |
| 31 | | J1 | 10,000 | | **15,200** |

**Accounts Receivable** — No. 112

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | Adj. entry | J2 | **200** | | **200** |

**Supplies** — No. 126

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 5 | | J1 | 2,500 | | 2,500 |
| 31 | Adj. entry | J2 | | **1,500** | **1,000** |

**Prepaid Insurance** — No. 130

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 4 | | J1 | 600 | | 600 |
| 31 | Adj. entry | J2 | | **50** | **550** |

**Equipment** — No. 157

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | 5,000 | | **5,000** |

**Accumulated Depreciation—Equipment** — No. 158

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | Adj. entry | J2 | | **40** | **40** |

**Notes Payable** — No. 200

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | | 5,000 | **5,000** |

**Accounts Payable** — No. 201

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 5 | | J1 | | 2,500 | **2,500** |

**Unearned Service Revenue** — No. 209

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 2 | | J1 | | 1,200 | 1,200 |
| 31 | Adj. entry | J2 | 400 | | **800** |

**Salaries and Wages Payable** — No. 212

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | Adj. entry | J2 | | **1,200** | **1,200** |

**Interest Payable** — No. 230

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | Adj. entry | J2 | | **50** | **50** |

**Owner's Capital** — No. 301

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | | 10,000 | 10,000 |
| **31** | **Closing entry** | **J3** | | **2,860** | **12,860** |
| **31** | **Closing entry** | **J3** | **500** | | **12,360** |

*Note:* The permanent accounts for Pioneer Advertising are shown here. Illustration 4.14 shows the temporary accounts. Both permanent and temporary accounts are part of the general ledger. They are segregated here to aid in learning.

A post-closing trial balance provides evidence that the company has properly journalized and posted the closing entries. It also shows that the accounting equation is in balance at the end of the accounting period. However, like the trial balance, it does not prove that Pioneer has recorded all transactions or that the ledger is correct. For example, the post-closing trial balance still will balance even if a transaction is not journalized and posted or if a transaction is journalized and posted twice.

The remaining accounts in the general ledger are temporary accounts, shown in **Illustration 4.14**. After Pioneer correctly posts the closing entries, each temporary account has a zero balance. These accounts are double-underlined to finalize the closing process.

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**ILLUSTRATION 4.14** General ledger, temporary accounts

(Temporary Accounts Only)

**GENERAL LEDGER**

**Owner's Drawings** No. 306

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 20 | | J1 | 500 | | 500 |
| 31 | Closing entry | J3 | | 500 | –0– |

**Income Summary** No. 350

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | Closing entry | J3 | | 10,600 | 10,600 |
| 31 | Closing entry | J3 | 7,740 | | 2,860 |
| 31 | Closing entry | J3 | 2,860 | | –0– |

**Service Revenue** No. 400

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | | J1 | | 10,000 | 10,000 |
| 31 | Adj. entry | J2 | | 400 | 10,400 |
| 31 | Adj. entry | J2 | | 200 | 10,600 |
| 31 | Closing entry | J3 | 10,600 | | –0– |

**Supplies Expense** No. 631

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | Adj. entry | J2 | 1,500 | | 1,500 |
| 31 | Closing entry | J3 | | 1,500 | –0– |

**Depreciation Expense** No. 711

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | Adj. entry | J2 | 40 | | 40 |
| 31 | Closing entry | J3 | | 40 | –0– |

**Insurance Expense** No. 722

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | Adj. entry | J2 | 50 | | 50 |
| 31 | Closing entry | J3 | | 50 | –0– |

**Salaries and Wages Expense** No. 726

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 26 | | J1 | 4,000 | | 4,000 |
| 31 | Adj. entry | J2 | 1,200 | | 5,200 |
| 31 | Closing entry | J3 | | 5,200 | –0– |

**Rent Expense** No. 729

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 3 | | J1 | 900 | | 900 |
| 31 | Closing entry | J3 | | 900 | –0– |

**Interest Expense** No. 905

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | Adj. entry | J2 | 50 | | 50 |
| 31 | Closing entry | J3 | | 50 | –0– |

*Note:* The temporary accounts for Pioneer Advertising are shown here. Illustration 4.13 shows the permanent accounts. Both permanent and temporary accounts are part of the general ledger. They are segregated here to aid in learning.

## DO IT! 2 | Closing Entries

Hancock Company has the following balances in selected accounts of its adjusted trial balance.

| | | | |
|---|---|---|---|
| Accounts Payable | $27,000 | Owner's Drawings | $15,000 |
| Service Revenue | 98,000 | Owner's Capital | 42,000 |
| Rent Expense | 22,000 | Accounts Receivable | 38,000 |
| Salaries and Wages Expense | 51,000 | Supplies Expense | 7,000 |

Prepare the closing entries at December 31.

**ACTION PLAN**

- Close revenue and expense accounts to Income Summary.
- Close Income Summary to Owner's Capital.
- Close Owner's Drawings to Owner's Capital.

### Solution

| | | | | |
|---|---|---|---|---|
| Dec. 31 | Service Revenue | | 98,000 | |
| | Income Summary | | | 98,000 |
| | (To close revenue account to Income Summary) | | | |
| 31 | Income Summary | | 80,000 | |
| | Salaries and Wages Expense | | | 51,000 |
| | Rent Expense | | | 22,000 |
| | Supplies Expense | | | 7,000 |
| | (To close expense accounts to Income Summary) | | | |

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| | | | |
|---|---|---|---|
| 31 | Income Summary ($98,000 – $80,000) | 18,000 | |
| | Owner's Capital | | 18,000 |
| | (To close net income to owner's capital) | | |
| 31 | Owner's Capital | 15,000 | |
| | Owner's Drawings | | 15,000 |
| | (To close owner's drawings to owner's capital) | | |

Related exercise material: **BE4.4, BE4.5, BE4.6, DO IT! 4.2, E4.4, E4.7, E4.8, and E4.11.**

# The Accounting Cycle and Correcting Entries

**LEARNING OBJECTIVE 3**

Explain the steps in the accounting cycle and how to prepare correcting entries.

## Summary of the Accounting Cycle

**Illustration 4.15** summarizes the steps in the accounting cycle. You can see that the cycle begins with the analysis of business transactions and ends with the preparation of a post-closing trial balance. Companies perform the steps in the cycle in sequence and repeat them in each accounting period.

Steps 1–3 may occur daily during the accounting period. Companies perform Steps 4–7 on a periodic basis, such as monthly, quarterly, or annually. Steps 8 and 9—closing entries and a post-closing trial balance—usually take place only at the end of a company's **annual** accounting period.

There are also two **optional steps** in the accounting cycle. As you have seen, companies may use a worksheet in preparing adjusting entries and financial statements. In addition, they may use reversing entries, as explained below.

## Reversing Entries—An Optional Step

Some accountants prefer to reverse certain adjusting entries by making a **reversing entry** at the beginning of the next accounting period. A reversing entry is the exact opposite of the adjusting entry made in the previous period. **Use of reversing entries is an optional bookkeeping procedure; it is not a required step in the accounting cycle.** Accordingly, we have chosen to cover this topic in an appendix at the end of the chapter.

## Correcting Entries—An Avoidable Step

Unfortunately, errors may occur in the recording process. Companies should correct errors, **as soon as they discover them**, by journalizing and posting **correcting entries**. If the accounting records are free of errors, no correcting entries are needed.

You should recognize several differences between correcting entries and adjusting entries. First, adjusting entries are an integral part of the accounting cycle. Correcting entries, on the other hand, are unnecessary if the records are error-free. Second, companies journalize and post adjustments **only at the end of an accounting period**. In contrast, companies make correcting entries **whenever they discover an error** (see **Ethics Note**). Finally, adjusting entries always affect at least one balance sheet account and one income statement account. In

**ETHICS NOTE**

**When companies find errors in previously released income statements, they restate those numbers. Perhaps because of the increased scrutiny caused by Sarbanes-Oxley, in a recent year companies filed a record 1,195 restatements**

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**ILLUSTRATION 4.15**

**Required steps in the accounting cycle**

# THE ACCOUNTING CYCLE

## 1. ANALYZE BUSINESS TRANSACTIONS

Equation Analysis

| | Assets | | | | = Liabilities + | Owner's Equity | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Cash | + Accounts Receivable | + Supplies | + Equipment | = Accounts Payable | + Owner's Capital | + Revenues | − Expenses | |
| | $9,200 | | $1,600 | $7,000 | $1,850 | $15,000 | $1,200 | $250 | |
| (6) | +1,500 | +$2,000 | | | | | +3,500 | | Service Revenue |
| | $10,700 | + $2,000 | + $1,600 | + $7,000 | = $1,850 | + $15,000 | + $4,700 | − $250 | |
| | $21,300 | | | | $21,300 | | | | |

## 2. JOURNALIZE THE TRANSACTIONS

GENERAL JOURNAL — PAGE J1

| Date | Account Titles and Explanation | Ref. | Debit | Credit |
|---|---|---|---|---|
| 2020 | | | | |
| Oct. 1 | Cash | 101 | 10,000 | |
| | Owner's Capital | 301 | | 10,000 |
| | (Owner's investment of cash in business) | | | |
| 1 | Equipment | 157 | 5,000 | |
| | Notes Payable | 200 | | 5,000 |
| | (Issued 3-month, 12% note for office equipment) | | | |
| 2 | Cash | 101 | 1,200 | |
| | Unearned Service Revenue | 209 | | 1,200 |
| | (Received cash from R. Knox for future services) | | | |

## 3. POST TO THE LEDGER ACCOUNTS

GENERAL LEDGER

**Cash** — No. 101

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | 10,000 | | 10,000 |
| 2 | | J1 | 1,200 | | 11,200 |
| 3 | | J1 | | 900 | 10,300 |
| 4 | | J1 | | 600 | 9,700 |
| 20 | | J1 | | 500 | 9,200 |
| 26 | | J1 | | 4,000 | 5,200 |
| 31 | | J1 | 10,000 | | 15,200 |

**Supplies** — No. 126

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 5 | | J1 | 2,500 | | 2,500 |

**Accounts Payable** — No. 201

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 5 | | J1 | | 2,500 | 2,500 |

**Unearned Service Revenue** — No. 209

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 2 | | J1 | | 1,200 | 1,200 |

**Owner's Capital** — No. 301

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | | 10,000 | 10,000 |

**Owner's Drawings** — No. 306

## 4. PREPARE A TRIAL BALANCE

Pioneer Advertising
Trial Balance
October 31, 2020

| | Debit | Credit |
|---|---|---|
| Cash | $15,200 | |
| Supplies | 2,500 | |
| Prepaid Insurance | 600 | |
| Equipment | 5,000 | |
| Notes Payable | | $ 5,000 |
| Accounts Payable | | 2,500 |
| Unearned Service Revenue | | 1,200 |
| Owner's Capital | | 10,000 |
| Owner's Drawings | 500 | |
| Service Revenue | | 10,000 |

## 5. JOURNALIZE AND POST ADJUSTING ENTRIES: DEFERRALS/ACCRUALS

GENERAL JOURNAL — J2

| Date | Account Titles and Explanation | Ref. | Debit | Credit |
|---|---|---|---|---|
| 2020 | Adjusting Entries | | | |
| Oct. 31 | Supplies Expense | 631 | 1,500 | |
| | | | | |
| 31 | | | | |

GENERAL LEDGER

**Cash** — No. 101

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | 10,000 | | 10,000 |
| 2 | | J1 | 1,200 | | 11,200 |
| 3 | | J1 | | 900 | 10,300 |
| 4 | | J1 | | 600 | 9,700 |
| 20 | | J1 | | 500 | 9,200 |
| 26 | | J1 | | 4,000 | 5,200 |

**Interest Payable** — No. 230

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 31 | Adj. entry | J2 | | 50 | 50 |

**Owner's Capital** — No. 301

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| 2020 | | | | | |
| Oct. 1 | | J1 | | 10,000 | 10,000 |

## 6. PREPARE AN ADJUSTED TRIAL BALANCE

Pioneer Advertising
Adjusted Trial Balance
October 31, 2020

| | Debit | Credit |
|---|---|---|
| Cash | $15,200 | |
| Accounts Receivable | 200 | |
| Supplies | 1,000 | |
| Prepaid Insurance | 550 | |
| Equipment | 5,000 | |
| Accumulated Depreciation—Equipment | | $ 40 |
| Notes Payable | | 5,000 |
| Accounts Payable | | 2,500 |
| Interest Payable | | 50 |
| Unearned Service Revenue | | 800 |
| Salaries and Wages Payable | | 1,200 |

## 7. PREPARE FINANCIAL STATEMENTS

Pioneer Advertising
Income Statement
For the Month Ended October 31, 2020

Pioneer Advertising
Owner's Equity Statement
For the Month Ended October 31, 2020

Pioneer Advertising
Balance Sheet
October 31, 2020

Assets

| | |
|---|---|
| Cash | $15,200 |
| Accounts receivable | 200 |
| Supplies | 1,000 |
| Prepaid insurance | 550 |

## 8. JOURNALIZE AND POST CLOSING ENTRIES

GENERAL JOURNAL — J3

| Date | Account Titles and Explanation | Ref. | Debit | Credit |
|---|---|---|---|---|
| | Closing Entries | | | |
| 2020 | (1) | | | |
| Oct. 31 | Service Revenue | 400 | 10,600 | |
| | Income Summary | 350 | | 10,600 |
| | (To close revenue account) | | | |
| | (2) | | | |
| 31 | Income Summary | 350 | 7,740 | |
| | Supplies Expense | 631 | | 1,500 |
| | Depreciation Expense | 711 | | 40 |
| | Insurance Expense | 722 | | 50 |
| | Salaries and Wages Expense | 726 | | 5,200 |
| | Rent Expense | 729 | | 900 |

## 9. PREPARE A POST-CLOSING TRIAL BALANCE

Pioneer Advertising
Post-Closing Trial Balance
October 31, 2020

| | Debit | Credit |
|---|---|---|
| Cash | $15,200 | |
| Accounts Receivable | 200 | |
| Supplies | 1,000 | |
| Prepaid Insurance | 550 | |
| Equipment | 5,000 | |
| Accumulated Depreciation—Equipment | | $ 40 |
| Notes Payable | | 5,000 |
| Accounts Payable | | 2,500 |
| Unearned Service Revenue | | 800 |
| Salaries and Wages Payable | | 1,200 |

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contrast, correcting entries may involve any combination of accounts in need of correction. **Correcting entries must be posted before closing entries.**

To determine the correcting entry, it is useful to compare the incorrect entry with the correct entry. Doing so helps identify the accounts and amounts that should—and should not—be corrected. After comparison, the accountant makes an entry to correct the accounts. The following two cases for Mercato Co. illustrate this approach.

## Case 1

On May 10, Mercato Co. journalized and posted a $50 cash collection on account from a customer as a debit to Cash $50 and a credit to Service Revenue $50. The company discovered the error on May 20, when the customer paid the remaining balance in full (see **Illustration 4.16**).

**ILLUSTRATION 4.16**
**Comparison of entries**

| Incorrect Entry (May 10) | | | Correct Entry (May 10) | | |
|---|---|---|---|---|---|
| Cash | 50 | | Cash | 50 | |
| Service Revenue | | 50 | Accounts Receivable | | 50 |

Comparison of the incorrect entry with the correct entry reveals that the debit to Cash $50 is correct. However, the $50 credit to Service Revenue should have been credited to Accounts Receivable. As a result, both Service Revenue and Accounts Receivable are overstated in the ledger. Mercato makes the correcting entry shown in **Illustration 4.17**.

**ILLUSTRATION 4.17**
**Correcting entry**

| Correcting Entry | | | | |
|---|---|---|---|---|
| May 20 | Service Revenue | | 50 | |
| | Accounts Receivable | | | 50 |
| | (To correct entry of May 10) | | | |

A = L + OE
–50 Rev
–50

**Cash Flows**
no effect

## Case 2

On May 18, Mercato purchased on account equipment costing $450. The transaction was journalized and posted as a debit to Equipment $45 and a credit to Accounts Payable $45. The error was discovered on June 3, when Mercato received the monthly statement for May from the creditor (see **Illustration 4.18**).

**ILLUSTRATION 4.18**
**Comparison of entries**

| Incorrect Entry (May 18) | | | Correct Entry (May 18) | | |
|---|---|---|---|---|---|
| Equipment | 45 | | Equipment | 450 | |
| Accounts Payable | | 45 | Accounts Payable | | 450 |

Comparison of the two entries shows that two accounts are incorrect. Equipment is understated $405, and Accounts Payable is understated $405. Mercato makes the correcting entry shown in **Illustration 4.19**.

**ILLUSTRATION 4.19**
**Correcting entry**

| Correcting Entry | | | | |
|---|---|---|---|---|
| June 3 | Equipment | | 405 | |
| | Accounts Payable | | | 405 |
| | (To correct entry of May 18) | | | |

A = L + OE
+405
+405

**Cash Flows**
no effect

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Instead of preparing a correcting entry, **it is possible to reverse the incorrect entry and then prepare the correct entry**. This approach will result in more entries and postings than a correcting entry, but it will accomplish the desired result.

## Accounting Across the Organization Yale Express

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### Lost in Transportation

**Yale Express**, a short-haul trucking firm, turned over much of its cargo to local truckers to complete deliveries. Yale collected the entire delivery charge. When billed by the local trucker, Yale sent payment for the final phase to the local trucker. Yale used a cutoff period of 20 days into the next accounting period in making its adjusting entries for accrued liabilities. That is, it waited 20 days to receive the local truckers' bills to determine the amount of the unpaid but incurred delivery charges as of the balance sheet date.

On the other hand, **Republic Carloading**, a nationwide, long-distance freight forwarder, frequently did not receive transportation bills from truckers to whom it passed on cargo until months after the year-end. In making its year-end adjusting entries, Republic waited for months in order to include all of these outstanding transportation bills.

When Yale Express merged with Republic Carloading, Yale's vice president employed the 20-day cutoff procedure for both firms. As a result, millions of dollars of Republic's accrued transportation bills went unrecorded. When the company detected the error and made correcting entries, these and other errors changed a reported profit of $1.14 million into a loss of $1.88 million!

**What might Yale Express's vice president have done to produce more accurate financial statements without waiting months for Republic's outstanding transportation bills? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 3 | Correcting Entries

Sanchez Company discovered the following errors made in January 2020.

1. A payment of Salaries and Wages Expense of $600 was debited to Supplies and credited to Cash, both for $600.
2. A collection of $3,000 from a client on account was debited to Cash $200 and credited to Service Revenue $200.
3. The purchase of supplies on account for $860 was debited to Supplies $680 and credited to Accounts Payable $680.

Correct the errors without reversing the incorrect entry.

**ACTION PLAN**

- Compare the incorrect entry with correct entry.
- After comparison, make an entry to correct the accounts.

### Solution

| | | | |
|---|---|---|---|
| **1.** | Salaries and Wages Expense | 600 | |
| | Supplies | | 600 |
| **2.** | Service Revenue | 200 | |
| | Cash | 2,800 | |
| | Accounts Receivable | | 3,000 |
| **3.** | Supplies ($860 – $680) | 180 | |
| | Accounts Payable | | 180 |

Related exercise material: **BE4.9, DO IT! 4.3, E4.12, and E4.13.**

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# Classified Balance Sheet

**LEARNING OBJECTIVE 4**

Identify the sections of a classified balance sheet.

The balance sheet presents a snapshot of a company's financial position at a point in time. To improve users' understanding of a company's financial position, companies often use a classified balance sheet. A **classified balance sheet** groups together similar assets and similar liabilities, using a number of standard classifications and sections. This is useful because items within a group have similar economic characteristics. A classified balance sheet generally contains the standard classifications listed in **Illustration 4.20**.

| Assets | Liabilities and Owner's Equity |
|---|---|
| Current assets | Current liabilities |
| Long-term investments | Long-term liabilities |
| Property, plant, and equipment | Owner's (Stockholders') equity |
| Intangible assets | |

**ILLUSTRATION 4.20**
**Standard balance sheet classifications**

These groupings help financial statement readers determine such things as (1) whether the company has enough assets to pay its debts as they come due, and (2) the claims of short- and long-term creditors on the company's total assets. Many of these groupings can be seen in the balance sheet of Franklin Company shown in **Illustration 4.21** (see **Helpful Hint**). In the sections that follow, we explain each of these groupings.

**HELPFUL HINT**
Recall that the basic accounting equation is Assets = Liabilities + Owner's Equity.

**Franklin Company**
**Balance Sheet**
**October 31, 2020**

| | | | |
|---|---|---|---|
| **Assets** | | | |
| **Current assets** | | | |
| Cash | | $ 6,600 | |
| Debt investments | | 2,000 | |
| Accounts receivable | | 7,000 | |
| Notes receivable | | 1,000 | |
| Inventory | | 3,000 | |
| Supplies | | 2,100 | |
| Prepaid insurance | | 400 | |
| Total current assets | | | $22,100 |
| **Long-term investments** | | | |
| Stock investments | | 5,200 | |
| Investment in real estate | | 2,000 | 7,200 |
| **Property, plant, and equipment** | | | |
| Land | | 10,000 | |
| Equipment | $24,000 | | |
| Less: Accumulated depreciation—equipment | 5,000 | 19,000 | 29,000 |
| **Intangible assets** | | | |
| Patents | | | 3,100 |
| Total assets | | | $61,400 |

**ILLUSTRATION 4.21**
**Classified balance sheet**

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**ILLUSTRATION 4.21**
(*continued*)

| Liabilities and Owner's Equity | | |
|---|---|---|
| **Current liabilities** | | |
| Notes payable | $11,000 | |
| Accounts payable | 2,100 | |
| Unearned service revenue | 900 | |
| Salaries and wages payable | 1,600 | |
| Interest payable | 450 | |
| Total current liabilities | | $16,050 |
| **Long-term liabilities** | | |
| Mortgage payable | 10,000 | |
| Notes payable | 1,300 | |
| Total long-term liabilities | | 11,300 |
| Total liabilities | | 27,350 |
| **Owner's equity** | | |
| Owner's capital | | 34,050 |
| Total liabilities and owner's equity | | $61,400 |

## Current Assets

**Current assets** are assets that a company expects to convert to cash or use up within one year or its operating cycle, whichever is longer. In Illustration 4.21, Franklin Company had current assets of $22,100. For most businesses, the cutoff for classification as current assets is one year from the balance sheet date. For example, accounts receivable are current assets because the company will collect them and convert them to cash within one year. Supplies is a current asset because the company expects to use them up in operations within one year.

Some companies use a period longer than one year to classify assets and liabilities as current because they have an operating cycle longer than one year. The **operating cycle** of a company is the average time that it takes to purchase inventory, sell it on account, and then collect cash from customers. For most businesses, this cycle takes less than a year so they use a one-year cutoff. But for some businesses, such as vineyards or airplane manufacturers, this period may be longer than a year. **Except where noted, we will assume that companies use one year to determine whether an asset or liability is current or long-term.**

Common types of current assets are (1) cash, (2) investments (such as short-term U.S. government securities), (3) receivables (notes receivable, accounts receivable, and interest receivable), (4) inventories, and (5) prepaid expenses (supplies and insurance). **On the balance sheet, companies usually list these items in the order in which they expect to convert them into cash.** Illustration 4.22 presents the current assets of **Southwest Airlines Co.**

**ILLUSTRATION 4.22**
**Current assets section**

Real World

| Southwest Airlines Co.<br>Balance Sheet (partial)<br>(in millions) | |
|---|---|
| **Current assets** | |
| Cash and cash equivalents | $1,355 |
| Short-term investments | 1,797 |
| Accounts receivable | 419 |
| Inventories | 467 |
| Prepaid expenses and other current assets | 418 |
| Total current assets | $4,456 |

As we explain later in the chapter, a company's current assets are important in assessing its short-term debt-paying ability.

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# Long-Term Investments

**Long-term investments** are generally (1) investments in stocks and bonds of other companies that are normally held for many years, (2) long-term assets such as land or buildings that a company is not currently using in its operating activities, and (3) long-term notes receivable (see **Alternative Terminology**). In Illustration 4.21, Franklin Company reported total long-term investments of $7,200 on its balance sheet. **Alphabet Inc.** reported long-term investments in its balance sheet, as shown in **Illustration 4.23**.

**ALTERNATIVE TERMINOLOGY**

**Long-term investments are often referred to simply as *investments*.**

Real World

**Alphabet Inc.**
**Balance Sheet (partial)**
**(in millions)**

| | |
|---|---|
| **Long-term investments** | |
| Non-marketable equity investments | $1,469 |

**ILLUSTRATION 4.23**

**Long-term investments section**

# Property, Plant, and Equipment

**Property, plant, and equipment** are assets with relatively long useful lives that a company is currently using in operating the business. This category includes land, buildings, machinery and equipment, delivery equipment, and furniture (see **Alternative Terminology**). In Illustration 4.21, Franklin Company reported property, plant, and equipment of $29,000.

**Depreciation** is the practice of allocating the cost of assets to a number of years. Companies do this by systematically assigning a portion of an asset's cost as an expense each year (rather than expensing the full purchase price in the year of purchase). The assets that the company depreciates are reported on the balance sheet at cost less accumulated depreciation. The **accumulated depreciation** account shows the total amount of depreciation that the company has expensed thus far in the asset's life. In Illustration 4.21, Franklin Company reported accumulated depreciation of $5,000. **Illustration 4.24** presents the property, plant, and equipment of **Tesla Motors, Inc**.

**ALTERNATIVE TERMINOLOGY**

**Property, plant, and equipment is sometimes called *fixed assets* or *plant assets*.**

Real World

**Tesla Motors, Inc.**
**Balance Sheet (partial)**
**(in thousands)**

| | |
|---|---|
| **Property, plant, and equipment** | |
| Machinery, equipment and office furniture | $ 322,394 |
| Tooling | 230,385 |
| Leasehold improvements | 94,763 |
| Building and building improvements | 67,707 |
| Land | 45,020 |
| Computer equipment and software | 42,073 |
| Construction in progress | 76,294 |
| | 878,636 |
| Less: Accumulated depreciation | 140,142 |
| Total | $ 738,494 |

**ILLUSTRATION 4.24**

**Property, plant, and equipment section**

# Intangible Assets

Many companies have long-lived assets that do not have physical substance yet often are very valuable. We call these assets **intangible assets** (see **Helpful Hint**). One significant intangible asset is goodwill. Others include patents, copyrights, and trademarks or trade names that give

**HELPFUL HINT**

**Sometimes intangible assets are reported under a broader heading called "*Other assets*."**

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the company **exclusive right** of use for a specified period of time. In Illustration 4.21, Franklin Company reported intangible assets of $3,100. **Illustration 4.25** shows the intangible assets of media and theme-park giant **The Walt Disney Company** in a recent year.

**ILLUSTRATION 4.25**
**Intangible assets section**

Real World

**The Walt Disney Company**
**Balance Sheet (partial)**
**(in millions)**

| | |
|---|---|
| **Intangible assets and goodwill** | |
| Character/franchise intangibles and copyrights | $ 5,830 |
| Other amortizable intangible assets | 903 |
| Accumulated amortization | (1,204) |
| Net amortizable intangible assets | 5,529 |
| FCC licenses | 667 |
| Trademarks | 1,218 |
| Other indefinite lived intangible assets | 20 |
| | 7,434 |
| Goodwill | 27,881 |
| | $35,315 |

## People, Planet, and Profit Insight

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### Regaining Goodwill

After falling to unforeseen lows amidst scandals, recalls, and economic crises, the American public's positive perception of the reputation of corporate America is on the rise. Overall corporate reputation is experiencing rehabilitation as the American public gives high marks overall to corporate America, specific industries, and the largest number of individual companies in a dozen years. This is according to the findings of a *Harris Interactive RQ Study,* which measures the reputations of the 60 most visible companies in the United States.

The survey focuses on six reputational dimensions that influence reputation and consumer behavior. Four of these dimensions, along with the five corporations that ranked highest within each, are as follows.

- **Social Responsibility**: (1) Whole Foods Market, (2) Johnson & Johnson, (3) Google, (4) The Walt Disney Company, (5) Procter & Gamble Co.
- **Emotional Appeal**: (1) Johnson & Johnson, (2) Amazon.com, (3) UPS, (4) General Mills, (5) Kraft Foods
- **Financial Performance**: (1) Google, (2) Berkshire Hathaway, (3) Apple, (4) Intel, (5) The Walt Disney Company
- **Products and Services**: (1) Intel Corporation, (2) 3M Company, (3) Johnson & Johnson, (4) Google, (5) Procter & Gamble Co.

**Source:** www.harrisinteractive.com.

**Name two industries today which are probably rated low on the reputational characteristics of "being trusted" and "having high ethical standards." (Go to WileyPLUS for this answer and additional questions.)**

**ETHICS NOTE**

**A company that has more current assets than current liabilities can increase the ratio of current assets to current liabilities by using cash to pay off some current liabilities. This gives the appearance of being more liquid. Do you think this move is ethical?**

# Current Liabilities

In the liabilities and owner's equity section of the balance sheet, the first grouping is current liabilities. **Current liabilities** are obligations that the company is to pay within the coming year or its operating cycle, whichever is longer (see **Ethics Note**). Common examples are accounts payable, salaries and wages payable, notes payable, interest payable, and income taxes payable. Also included as current liabilities are current maturities of long-term obligations—payments to be made within the next year on long-term obligations. In Illustration 4.21, Franklin Company reported five different types of current liabilities, for a total of

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$16,050. **Illustration 4.26** shows the current liabilities section adapted from the balance sheet of **Marcus Corporation**.

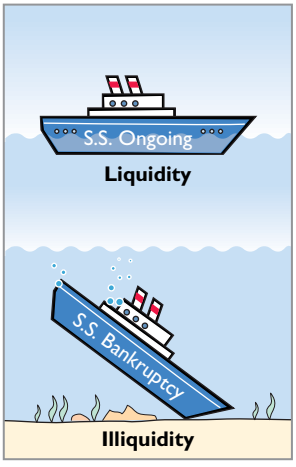
Real World

**Marcus Corporation**
**Balance Sheet (partial)**
**(in thousands)**

| | |
|---|---|
| **Current liabilities** | |
| Notes payable | $ 239 |
| Accounts payable | 24,242 |
| Current maturities of long-term debt | 57,250 |
| Other current liabilities | 27,477 |
| Income taxes payable | 11,215 |
| Salaries and wages payable | 6,720 |
| Total current liabilities | $127,143 |

**ILLUSTRATION 4.26**
**Current liabilities section**

Users of financial statements look closely at the relationship between current assets and current liabilities. This relationship is important in evaluating a company's **liquidity**—its ability to pay obligations expected to be due within the next year. When current assets exceed current liabilities, the likelihood for paying the liabilities is favorable. When the reverse is true, short-term creditors may not be paid, and the company may ultimately be forced into bankruptcy.




## Accounting Across the Organization — REL Consultancy Group

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### Can a Company Be Too Liquid?

There actually is a point where a company can be too liquid—that is, it can have too much working capital (current assets less current liabilities). While it is important to be liquid enough to be able to pay short-term bills as they come due, a company does not want to tie up its cash in extra inventory or receivables that are not earning the company money.

By one estimate from the **REL Consultancy Group**, the thousand largest U.S. companies have on their books cumulative excess working capital of $764 billion. Based on this figure, companies could have reduced debt by 36% or increased net income by 9%. Given that managers throughout a company are interested in improving profitability, it is clear that they should have an eye toward managing working capital. They need to aim for a "Goldilocks solution"—not too much, not too little, but just right.

**Source:** K. Richardson, "Companies Fall Behind in Cash Management," *Wall Street Journal* (June 19, 2007).

**What can various company managers do to ensure that working capital is managed efficiently to maximize net income? (Go to WileyPLUS for this answer and additional questions.)**

# Long-Term Liabilities

**Long-term liabilities** are obligations that a company expects to pay **after** one year. Liabilities in this category include bonds payable, mortgages payable, long-term notes payable, lease liabilities, and pension liabilities. Many companies report long-term debt maturing after one year as a single amount in the balance sheet and show the details of the debt in notes that accompany the financial statements. Others list the various types of long-term liabilities. In Illustration 4.21, Franklin Company reported long-term liabilities of $11,300. **Illustration 4.27** shows the long-term liabilities that **Nike, Inc.** reported in its balance sheet in a recent year.

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**ILLUSTRATION 4.27**
**Long-term liabilities section**

Real World

**Nike, Inc.**
**Balance Sheet (partial)**
**(in millions)**

| | |
|---|---|
| **Long-term liabilities** | |
| Bonds payable | $1,106 |
| Notes payable | 51 |
| Deferred income taxes and other | 1,544 |
| Total long-term liabilities | $2,701 |

## Owner's Equity

The content of the owner's equity section varies with the form of business organization. In a proprietorship, there is one capital account. In a partnership, there is a capital account for each partner. Corporations divide owners' equity into two accounts—Common Stock (sometimes referred to as Capital Stock) and Retained Earnings. Corporations record stockholders' investments in the company by debiting an asset account and crediting the Common Stock account. They record in the Retained Earnings account income retained for use in the business. Corporations combine the Common Stock and Retained Earnings accounts and report them on the balance sheet as **stockholders' equity**. (We discuss these corporation accounts in later chapters.) **Nordstrom, Inc.** recently reported its stockholders' equity section as shown in **Illustration 4.28**.

**ILLUSTRATION 4.28**
**Stockholders' equity section**

Real World

**Nordstrom, Inc.**
**Balance Sheet (partial)**
**(in thousands)**

| | |
|---|---|
| **Stockholders' equity** | |
| Common stock, 271,331 shares | $ 685,934 |
| Retained earnings | 1,406,747 |
| Total stockholders' equity | $2,092,681 |

### DO IT! 4 | Balance Sheet Classifications

The following accounts were taken from the financial statements of Callahan Company.

_____ Salaries and wages payable
_____ Service revenue
_____ Interest payable
_____ Goodwill
_____ Debt investments (short-term)
_____ Mortgage payable (due in 3 years)
_____ Stock investments (long-term)
_____ Equipment
_____ Accumulated depreciation—equipment
_____ Depreciation expense
_____ Owner's capital
_____ Unearned service revenue

Match each of the following to its proper balance sheet classification, shown below. If the item would not appear on a balance sheet, use "NA."

Current assets (CA)
Long-term investments (LTI)
Property, plant, and equipment (PPE)
Intangible assets (IA)
Current liabilities (CL)
Long-term liabilities (LTL)
Owner's equity (OE)

**ACTION PLAN**

- Analyze whether each financial statement item is an asset, liability, or owner's equity.
- Determine if asset and liability items are short-term or long-term.

**Solution**

__CL__ Salaries and wages payable
__NA__ Service revenue
__CL__ Interest payable
__IA__ Goodwill
__CA__ Debt investments (short-term)
__LTL__ Mortgage payable (due in 3 years)
__LTI__ Stock investments (long-term)
__PPE__ Equipment
__PPE__ Accumulated depreciation—equipment
__NA__ Depreciation expense
__OE__ Owner's capital
__CL__ Unearned service revenue

Related exercise material: **BE4.11, DO IT! 4.4, E4.14, E4.15, E4.16, and E4.17.**

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# Appendix 4A Reversing Entries

**LEARNING OBJECTIVE *5**

Prepare reversing entries.

After preparing the financial statements and closing the books, it is often helpful to reverse some of the adjusting entries before recording the regular transactions of the next period. Such entries are **reversing entries**. Companies make **a reversing entry at the beginning of the next accounting period**. Each reversing entry **is the exact opposite of the adjusting entry made in the previous period**. The recording of reversing entries is an **optional step** in the accounting cycle.

The purpose of reversing entries is to simplify the recording of a subsequent transaction related to an adjusting entry. For example, in Chapter 3, the payment of salaries after an adjusting entry resulted in two debits: one to Salaries and Wages Payable and the other to Salaries and Wages Expense. With reversing entries, the company can debit the entire subsequent payment to Salaries and Wages Expense. **The use of reversing entries does not change the amounts reported in the financial statements.** What it does is simplify the recording of subsequent transactions.

## Reversing Entries Example

Companies most often use reversing entries to reverse two types of adjusting entries: accrued revenues and accrued expenses. To illustrate the optional use of reversing entries for accrued expenses, we will use the salaries expense transactions for Pioneer Advertising as illustrated in Chapters 2, 3, and 4. The transaction and adjustment data are as follows.

1. October 26 (initial salary entry): Pioneer pays $4,000 of salaries and wages earned between October 15 and October 26.
2. October 31 (adjusting entry): Salaries and wages earned between October 29 and October 31 are $1,200. The company will pay these in the November 9 payroll.
3. November 9 (subsequent salary entry): Salaries and wages paid are $4,000. Of this amount, $1,200 applied to accrued salaries and wages payable and $2,800 was earned between November 1 and November 9.

Illustration 4A.1 shows the entries with and without reversing entries.

**ILLUSTRATION 4A.1 Comparative entries—without and with reversing**

| Without Reversing Entries (per chapter) | | | | With Reversing Entries (per appendix) | | | |
|---|---|---|---|---|---|---|---|
| | Initial Salary Entry | | | | Initial Salary Entry | | |
| Oct. 26 | Salaries and Wages Expense | 4,000 | | Oct. 26 | (Same entry) | | |
| | Cash | | 4,000 | | | | |
| | Adjusting Entry | | | | Adjusting Entry | | |
| Oct. 31 | Salaries and Wages Expense | 1,200 | | Oct. 31 | (Same entry) | | |
| | Salaries and Wages Payable | | 1,200 | | | | |
| | Closing Entry | | | | Closing Entry | | |
| Oct. 31 | Income Summary | 5,200 | | Oct. 31 | (Same entry) | | |
| | Salaries and Wages Expense | | 5,200 | | | | |
| | Reversing Entry | | | | Reversing Entry | | |
| Nov. 1 | No reversing entry is made. | | | Nov. 1 | **Salaries and Wages Payable** | **1,200** | |
| | | | | | **Salaries and Wages Expense** | | **1,200** |
| | Subsequent Salary Entry | | | | Subsequent Salary Entry | | |
| Nov. 9 | Salaries and Wages Payable | 1,200 | | Nov. 9 | **Salaries and Wages Expense** | **4,000** | |
| | Salaries and Wages Expense | 2,800 | | | **Cash** | | **4,000** |
| | Cash | | 4,000 | | | | |

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The first three entries are the same whether or not Pioneer uses reversing entries. The last two entries are different. The November 1 **reversing entry** eliminates the $1,200 balance in Salaries and Wages Payable created by the October 31 adjusting entry. The reversing entry also creates a $1,200 credit balance in the Salaries and Wages Expense account. As you know, it is unusual for an expense account to have a credit balance. The balance is correct in this instance, though, because it anticipates that the entire amount of the first salaries and wages payment in the new accounting period will be debited to Salaries and Wages Expense. This debit will eliminate the credit balance. The resulting debit balance in the expense account will equal the salaries and wages expense incurred in the new accounting period ($2,800 in this example).

If Pioneer makes reversing entries, it can debit all cash payments of expenses to the expense account. This means that on November 9 (and every payday) Pioneer can debit Salaries and Wages Expense for the amount paid, without regard to any accrued salaries and wages payable. Being able to make the **same entry each time** simplifies the recording process. The company can record subsequent transactions as if the related adjusting entry had never been made.

**Illustration 4A.2** shows the posting of the entries with reversing entries.

**ILLUSTRATION 4A.2** **Postings with reversing entries**

**Salaries and Wages Expense**

| | | | | | |
|---|---|---|---|---|---|
| 10/26 | Paid | 4,000 | | | |
| 31 | Adjusting | 1,200 | | | |
| | | 5,200 | 10/31 | Closing | 5,200 |
| 11/9 | Paid | 4,000 | **11/1** | **Reversing** | **1,200** |

**Salaries and Wages Payable**

| | | | | |
|---|---|---|---|---|
| **11/1** | **Reversing** | **1,200** | 10/31 Adjusting | 1,200 |

A company can also use reversing entries for accrued revenue adjusting entries. For Pioneer, the adjusting entry was Accounts Receivable (Dr.) $200 and Service Revenue (Cr.) $200. Thus, the reversing entry on November 1 is:

| | | | |
|---|---|---|---|
| Nov. 1 | Service Revenue | 200 | |
| | Accounts Receivable | | 200 |
| | (To reverse October 31 adjusting entry) | | |

A = L + OE
–200 Rev
+200

**Cash Flows**
no effect

When Pioneer collects the accrued service revenue, it debits Cash and credits Service Revenue.

# Review and Practice

## Learning Objectives Review

### 1 Prepare a worksheet.

The steps in preparing a worksheet are as follows. (a) Prepare a trial balance on the worksheet. (b) Enter the adjustments in the adjustments columns. (c) Enter adjusted balances in the adjusted trial balance columns. (d) Extend adjusted trial balance amounts to appropriate financial statement columns. (e) Total the statement columns, compute net income (or net loss), and complete the worksheet.

### 2 Prepare closing entries and a post-closing trial balance.

Closing the books occurs at the end of an accounting period. The process is to journalize and post closing entries and then underline and balance all accounts. In closing the books, companies make separate entries to close revenues and expenses to Income Summary, Income Summary to Owner's Capital, and Owner's Drawings to Owner's Capital. Only temporary accounts are closed. A post-closing trial

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balance contains the balances in permanent accounts that are carried forward to the next accounting period. The purpose of this trial balance is to prove the equality of these balances.

### 3 Explain the steps in the accounting cycle and how to prepare correcting entries.

The required steps in the accounting cycle are (1) analyze business transactions, (2) journalize the transactions, (3) post to ledger accounts, (4) prepare a trial balance, (5) journalize and post adjusting entries, (6) prepare an adjusted trial balance, (7) prepare financial statements, (8) journalize and post closing entries, and (9) prepare a post-closing trial balance.

One way to determine the correcting entry is to compare the incorrect entry with the correct entry. After comparison, the company makes a correcting entry to correct the accounts. An alternative to a correcting entry is to reverse the incorrect entry and then prepare the correct entry.

### 4 Identify the sections of a classified balance sheet.

A classified balance sheet categorizes assets as current assets; long-term investments; property, plant, and equipment; and intangibles. Liabilities are classified as either current or long-term. There is also an owner's (owners') equity section, which varies with the form of business organization.

### *5 Prepare reversing entries.

Reversing entries are the opposite of the adjusting entries made in the preceding period. Some companies choose to make reversing entries at the beginning of a new accounting period to simplify the recording of later transactions related to the adjusting entries. In most cases, only accrued adjusting entries are reversed.

## Glossary Review

**Classified balance sheet** A balance sheet that contains standard classifications or sections. (p. 4-23).

**Closing entries** Entries made at the end of an accounting period to transfer the balances of temporary accounts to a permanent owner's equity account, Owner's Capital. (p. 4-12).

**Correcting entries** Entries to correct errors made in recording transactions. (p. 4-19).

**Current assets** Assets that a company expects to convert to cash or use up within one year or its operating cycle, whichever is longer. (p. 4-24).

**Current liabilities** Obligations that a company expects to pay within the coming year or its operating cycle, whichever is longer. (p. 4-26).

**Income Summary** A temporary account used in closing revenue and expense accounts. (p. 4-12).

**Intangible assets** Long-lived assets that do not have physical substance. (p. 4-25).

**Liquidity** The ability of a company to pay obligations expected to be due within the next year. (p. 4-27).

**Long-term investments** Generally, (1) investments in stocks and bonds of other companies that companies normally hold for many years; (2) long-term assets, such as land and buildings, not currently being used in operating activities; and (3) long-term notes receivable. (p. 4-25).

**Long-term liabilities** Obligations that a company expects to pay after one year. (p. 4-27).

**Operating cycle** The average time that it takes to purchase inventory, sell it on account, and then collect cash from customers. (p. 4-24).

**Permanent (real) accounts** Accounts that relate to one or more future accounting periods. Consist of all balance sheet accounts. Balances are carried forward to the next accounting period. (p. 4-12).

**Post-closing trial balance** A list of permanent accounts and their balances after a company has journalized and posted closing entries. (p. 4-16).

**Property, plant, and equipment** Assets with relatively long useful lives and currently being used in operations. (p. 4-25).

**Reversing entry** An entry, made at the beginning of the next accounting period that is the exact opposite of the adjusting entry made in the previous period. (p. 4-19).

**Stockholders' equity** The ownership claim of shareholders on total assets. It is to a corporation what owner's equity is to a proprietorship. (p. 4-28).

**Temporary (nominal) accounts** Accounts that relate only to a given accounting period. Consist of all income statement accounts and owner's drawings account. All temporary accounts are closed at end of the accounting period. (p. 4-12).

**Worksheet** A multiple-column form that may be used in making adjustments and in preparing financial statements. (p. 4-2).

## Practice Multiple-Choice Questions

**1. (LO 1)** Which of the following statements is **incorrect** concerning the worksheet?

**a.** The worksheet is essentially a working tool of the accountant.

**b.** The worksheet is distributed to management and other interested parties.

**c.** The worksheet cannot be used as a basis for posting to ledger accounts.

**d.** Financial statements can be prepared directly from the worksheet before journalizing and posting the adjusting entries.

**2. (LO 1)** In a worksheet, net income is entered in the following columns:

**a.** income statement (Dr) and balance sheet (Dr).

**b.** income statement (Cr) and balance sheet (Dr).

**c.** income statement (Dr) and balance sheet (Cr).

**d.** income statement (Cr) and balance sheet (Cr).

**3. (LO 1)** In the unadjusted trial balance of its worksheet for the year ended December 31, 2020, Knox Company reported Equipment of $120,000. The year-end adjusting entries require an adjustment of

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$15,000 for depreciation expense for the equipment. After the adjusted trial balance is completed, what amount should be shown in the financial statement columns?

**a.** A debit of $105,000 for Equipment in the balance sheet column.

**b.** A credit of $15,000 for Depreciation Expense in the income statement column.

**c.** A debit of $120,000 for Equipment in the balance sheet column.

**d.** A debit of $15,000 for Accumulated Depreciation—Equipment in the balance sheet column.

**4. (LO 2)** An account that will have a zero balance after closing entries have been journalized and posted is:

**a.** Service Revenue.

**b.** Supplies.

**c.** Prepaid Insurance.

**d.** Accumulated Depreciation—Equipment.

**5. (LO 2)** When a net loss has occurred, Income Summary is:

**a.** debited and Owner's Capital is credited.

**b.** credited and Owner's Capital is debited.

**c.** debited and Owner's Drawings is credited.

**d.** credited and Owner's Drawings is debited.

**6. (LO 2)** The closing process involves separate entries to close (1) expenses, (2) drawings, (3) revenues, and (4) income summary. The correct sequencing of the entries is:

**a.** (4), (3), (2), (1).

**b.** (1), (2), (3), (4).

**c.** (3), (1), (4), (2).

**d.** (3), (2), (1), (4).

**7. (LO 2)** Which types of accounts will appear in the post-closing trial balance?

**a.** Permanent (real) accounts.

**b.** Temporary (nominal) accounts.

**c.** Accounts shown in the income statement columns of a worksheet.

**d.** None of these answer choices is correct.

**8. (LO 3)** All of the following are required steps in the accounting cycle **except**:

**a.** journalizing and posting closing entries.

**b.** preparing financial statements.

**c.** journalizing the transactions.

**d.** preparing a worksheet.

**9. (LO 3)** The proper order of the following steps in the accounting cycle is:

**a.** prepare unadjusted trial balance, journalize transactions, post to ledger accounts, journalize and post adjusting entries.

**b.** journalize transactions, prepare unadjusted trial balance, post to ledger accounts, journalize and post adjusting entries.

**c.** journalize transactions, post to ledger accounts, prepare unadjusted trial balance, journalize and post adjusting entries.

**d.** prepare unadjusted trial balance, journalize and post adjusting entries, journalize transactions, post to ledger accounts.

**10. (LO 3)** When Lopez Company purchased supplies worth $600, it incorrectly recorded a credit to Supplies for $6,000 and a debit to Cash for $6,000. Before correcting this error:

**a.** Cash is overstated and Supplies is overstated.

**b.** Cash is understated and Supplies is understated.

**c.** Cash is understated and Supplies is overstated.

**d.** Cash is overstated and Supplies is understated.

**11. (LO 3)** Cash of $100 received at the time the service was performed was journalized and posted as a debit to Cash $100 and a credit to Accounts Receivable $100. Assuming the incorrect entry is not reversed, the correcting entry is:

**a.** debit Service Revenue $100 and credit Accounts Receivable $100.

**b.** debit Accounts Receivable $100 and credit Service Revenue $100.

**c.** debit Cash $100 and credit Service Revenue $100.

**d.** debit Accounts Receivable $100 and credit Cash $100.

**12. (LO 4)** The correct order of presentation in a classified balance sheet for the following current assets is:

**a.** accounts receivable, cash, prepaid insurance, inventory.

**b.** cash, inventory, accounts receivable, prepaid insurance.

**c.** cash, accounts receivable, inventory, prepaid insurance.

**d.** inventory, cash, accounts receivable, prepaid insurance.

**13. (LO 4)** A company has purchased a tract of land. It expects to build a production plant on the land in approximately 5 years. During the 5 years before construction, the land will be idle. The land should be reported as:

**a.** property, plant, and equipment.

**b.** land expense.

**c.** a long-term investment.

**d.** an intangible asset.

**14. (LO 4)** In a classified balance sheet, assets are usually classified using the following categories:

**a.** current assets; long-term assets; property, plant, and equipment; and intangible assets.

**b.** current assets; long-term investments; property, plant, and equipment; and tangible assets.

**c.** current assets; long-term investments; tangible assets; and intangible assets.

**d.** current assets; long-term investments; property, plant, and equipment; and intangible assets.

**15. (LO 4)** Current assets are listed:

**a.** by expected conversion to cash.

**b.** by importance.

**c.** by longevity.

**d.** alphabetically.

***16. (LO 5)** On December 31, Harvey Kohl Company correctly made an adjusting entry to recognize $2,000 of accrued salaries payable. On January 8 of the next year, total salaries of $3,800 were paid. Assuming

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the correct reversing entry was made on January 1, the entry on January 8 will result in a credit to Cash $3,800 and the following debit(s):

**a.** Salaries and Wages Payable $1,800 and Salaries and Wages Expense $2,000.

**b.** Salaries and Wages Payable $2,000 and Salaries and Wages Expense $1,800.

**c.** Salaries and Wages Expense $3,800.

**d.** Salaries and Wages Payable $3,800.

### Solutions

**1. b.** The worksheet is a working tool of the accountant; it is not distributed to management and other interested parties. The other choices are all true statements.

**2. c.** Net income is entered in the Dr column of the income statement and the Cr column of the balance sheet. The other choices are incorrect because net income is entered in the (a) Cr (not Dr) column of the balance sheet, (b) Dr (not Cr) column of the income statement and in the Cr (not Dr) column of the balance sheet, and (d) Dr (not Cr) column of the income statement.

**3. c.** A debit of $120,000 for Equipment would appear in the balance sheet column. The other choices are incorrect because (a) Equipment, less accumulated depreciation of $15,000, would total $105,000 under assets on the balance sheet, not on the worksheet; (b) a debit, not credit, for Depreciation Expense would appear in the income statement column; and (d) a credit, not debit, of $15,000 for Accumulated Depreciation—Equipment would appear in the balance sheet column.

**4. a.** The Service Revenue account will have a zero balance after closing entries have been journalized and posted because it is a temporary account. The other choices are incorrect because (b) Supplies, (c) Prepaid Insurance, and (d) Accumulated Depreciation—Equipment are all permanent accounts and therefore not closed in the closing process.

**5. b.** The effect of a net loss is a credit to Income Summary and a debit to Owner's Capital. The other choices are incorrect because (a) Income Summary is credited, not debited, and Owner's Capital is debited, not credited; (c) Income Summary is credited, not debited, and Owner's Drawings is not affected; and (d) Owner's Capital, not Owner's Drawings, is debited.

**6. c.** The correct order is (3) revenues, (1) expenses, (4) income summary, and (2) drawings. Therefore, choices (a), (b), and (d) are incorrect.

**7. a.** Permanent accounts appear in the post-closing trial balance. The other choices are incorrect because (b) temporary accounts and (c) income statement accounts are closed to a zero balance and are therefore not included in the post-closing trial balance. Choice (d) is wrong as there is only one correct answer for this question.

**8. d.** Preparing a worksheet is not a required step in the accounting cycle. The other choices are all required steps in the accounting cycle.

**9. c.** The proper order of the steps in the accounting cycle is (1) journalize transactions, (2) post to ledger accounts, (3) prepare unadjusted trial balance, and (4) journalize and post adjusting entries. Therefore, choices (a), (b), and (d) are incorrect.

**10. d.** This entry causes Cash to be overstated and Supplies to be understated. Supplies should have been debited (increasing supplies) and Cash should have been credited (decreasing cash). The other choices are incorrect because (a) Supplies is understated, not overstated; (b) Cash is overstated, not understated; and (c) Cash is overstated, not understated, and Supplies is understated, not overstated.

**11. b.** The correcting entry is to debit Accounts Receivable $100 and credit Service Revenue $100. The other choices are incorrect because (a) Service Revenue should be credited, not debited, and Accounts Receivable should be debited, not credited; (c) Service Revenue should be credited for $100, and Cash should not be included in the correcting entry as it was recorded properly; and (d) Accounts Receivable should be debited for $100 and Cash should not be included in the correcting entry as it was recorded properly.

**12. c.** Companies list current assets on balance sheet in the order of liquidity: cash, accounts receivable, inventory, and prepaid insurance. Therefore, choices (a), (b), and (d) are incorrect.

**13. c.** Long-term investments include long-term assets such as land that a company is not currently using in its operating activities. The other choices are incorrect because (a) land would be reported as property, plant, and equipment only if it is being currently used in the business; (b) land is an asset, not an expense; and (d) land has physical substance and thus is a tangible property.

**14. d.** These are the categories usually used in a classified balance sheet. The other choices are incorrect because the categories (a) "long-term assets" and (b) and (c) "tangible assets" are generally not used.

**15. a.** Current assets are listed in order of their liquidity, not (b) by importance, (c) by longevity, or (d) alphabetically.

***16. c.** The use of reversing entries simplifies the recording of the first payroll following the end of the year by eliminating the need to make an entry to the Salaries and Wages Payable account. The other choices are incorrect because (a) Salaries and Wages Payable is not part of the payroll entry on January 8, and the debit to Salaries and Wages Expense should be for $3,800, not $2,000; and (b) and (d) the Salaries and Wages Expense account, not the Salaries and Wages Payable account, should be debited.

## Practice Brief Exercises

**1. (LO 2)** The ledger of Quintana Company contains the following balances: Owner's Capital $40,000, Owner's Drawings $3,000, Service Revenue $65,000, Salaries and Wages Expense $39,000, and Maintenance and Repairs Expense $9,000. Prepare the closing entries at December 31.

*Prepare closing entries from ledger balances.*

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**Solution**

**1.**

| | | | | |
|---|---|---|---|---|
| Dec. 31 | Service Revenue | | 65,000 | |
| | Income Summary | | | 65,000 |
| 31 | Income Summary | | 48,000 | |
| | Salaries and Wages Expense | | | 39,000 |
| | Maintenance and Repairs Expense | | | 9,000 |
| 31 | Income Summary | | 17,000 | |
| | Owner's Capital | | | 17,000 |
| 31 | Owner's Capital | | 3,000 | |
| | Owner's Drawing | | | 3,000 |

*Prepare correcting entries.*

**2. (LO 3)** At Shields Company, the following errors were discovered after the transactions had been journalized and posted. Prepare the correcting entries.

**a.** A cash sale to a customer for $780 was recorded as a debit to Cash $780 and a credit to Accounts Receivable $780.

**b.** The purchase of equipment on account for $1,730 was recorded as a debit to Equipment $1,370 and a credit to Accounts Payable $1,370.

**Solution**

**2.**

| | | | | |
|---|---|---|---|---|
| **a.** | Accounts Receivable | | 780 | |
| | Service Revenue | | | 780 |
| **b.** | Equipment ($1,730 – $1,370) | | 360 | |
| | Accounts Payable | | | 360 |

*Prepare the current assets section of a balance sheet.*

**3. (LO 4)** **Financial Statement** The balance sheet debit column of the worksheet for Miguel Company includes the following accounts: Accounts Receivable $25,000, Prepaid Insurance $7,000, Cash $8,000, Supplies $11,000, and Stock Investments (short-term) $14,000. Prepare the current assets section of the balance sheet, listing the accounts in proper sequence.

**Solution**

**3.**

**Miguel Company**
**Partial Balance Sheet**

| | |
|---|---|
| Current assets | |
| Cash | $ 8,000 |
| Stock investments | 14,000 |
| Accounts receivable | 25,000 |
| Supplies | 11,000 |
| Prepaid insurance | 7,000 |
| Total current assets | $65,000 |

## Practice Exercises

*Journalize and post closing entries, and prepare a post-closing trial balance.*

**1. (LO 2)** Hercules Company ended its fiscal year on August 31, 2020. The company's adjusted trial balance as of the end of its fiscal year is as shown below.

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**Hercules Company**
**Adjusted Trial Balance**
**August 31, 2020**

| No. | Account Titles | Debit | Credit |
|---|---|---|---|
| 101 | Cash | $10,900 | |
| 112 | Accounts Receivable | 6,200 | |
| 157 | Equipment | 10,600 | |
| 167 | Accumulated Depr.—Equip. | | $ 5,400 |
| 201 | Accounts Payable | | 2,800 |
| 208 | Unearned Rent Revenue | | 1,200 |
| 301 | Owner's Capital | | 31,700 |
| 306 | Owner's Drawings | 12,000 | |
| 404 | Service Revenue | | 42,400 |
| 429 | Rent Revenue | | 6,100 |
| 711 | Depreciation Expense | 2,700 | |
| 720 | Salaries and Wages Expense | 37,100 | |
| 732 | Utilities Expense | 10,100 | |
| | | $89,600 | $89,600 |

## Instructions

**a.** Prepare the closing entries using page J15 in a general journal.

**b.** Post to Owner's Capital and No. 350 Income Summary accounts. (Use the three-column form.)

**c.** Prepare a post-closing trial balance at August 31, 2020.

## Solution

**1. a.**

**GENERAL JOURNAL** **J15**

| Date | Account Titles | Ref. | Debit | Credit |
|---|---|---|---|---|
| Aug. 31 | Service Revenue | 404 | 42,400 | |
| | Rent Revenue | 429 | 6,100 | |
| | Income Summary | 350 | | 48,500 |
| | (To close revenue accounts) | | | |
| 31 | Income Summary | 350 | 49,900 | |
| | Salaries and Wages Expense | 720 | | 37,100 |
| | Utilities Expense | 732 | | 10,100 |
| | Depreciation Expense | 711 | | 2,700 |
| | (To close expense accounts) | | | |
| 31 | Owner's Capital ($49,900 – $48,500) | 301 | 1,400 | |
| | Income Summary | 350 | | 1,400 |
| | (To close net loss to capital) | | | |
| 31 | Owner's Capital | 301 | 12,000 | |
| | Owner's Drawings | 306 | | 12,000 |
| | (To close drawings to capital) | | | |

**b.**

**Owner's Capital** **No. 301**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| Aug. 31 | Balance | | | | 31,700 |
| 31 | Close net loss | J15 | 1,400 | | 30,300 |
| 31 | Close drawings | J15 | 12,000 | | 18,300 |

**Income Summary** **No. 350**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| Aug. 31 | Close revenue | J15 | | 48,500 | 48,500 |
| 31 | Close expenses | J15 | 49,000 | | (1,400) |
| 31 | Close net loss | J15 | | 1,400 | 0 |

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**c.**

**Hercules Company**
**Post-Closing Trial Balance**
**August 31, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $10,900 | |
| Accounts Receivable | 6,200 | |
| Equipment | 10,600 | |
| Accumulated Depreciation—Equipment | | $ 5,400 |
| Accounts Payable | | 2,800 |
| Unearned Rent Revenue | | 1,200 |
| Owner's Capital | | 18,300 |
| | $27,700 | $27,700 |

*Prepare financial statements.*

**2. (LO 4)** **Financial Statement** The adjusted trial balance for Hercules Company is presented in **Practice Exercise 1**.

**Instructions**

**a.** Prepare an income statement and an owner's equity statement for the year ended August 31, 2020. Hercules did not make any capital investments during the year.

**b.** Prepare a classified balance sheet at August 31, 2020.

**Solution**

**2. a.**

**Hercules Company**
**Income Statement**
**For the Year Ended August 31, 2020**

| | | |
|---|---|---|
| Revenues | | |
| Service revenue | $42,400 | |
| Rent revenue | 6,100 | |
| Total revenues | | $48,500 |
| Expenses | | |
| Salaries and wages expense | 37,100 | |
| Utilities expense | 10,100 | |
| Depreciation expense | 2,700 | |
| Total expenses | | 49,900 |
| Net loss | | $ (1,400) |

**Hercules Company**
**Owner's Equity Statement**
**For the Year Ended August 31, 2020**

| | | |
|---|---|---|
| Owner's capital, September 1, 2019 | | $ 31,700 |
| Less: Net loss | $ 1,400 | |
| Owner's drawings | 12,000 | 13,400 |
| Owner's capital, August 31, 2020 | | $ 18,300 |

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**b.**

**Hercules Company**
**Balance Sheet**
**August 31, 2020**

| | | |
|---|---|---|
| **Assets** | | |
| Current assets | | |
| Cash | $10,900 | |
| Accounts receivable | 6,200 | |
| Total current assets | | $17,100 |
| Property, plant, and equipment | | |
| Equipment | 10,600 | |
| Less: Accumulated depreciation—equip. | 5,400 | 5,200 |
| Total assets | | $22,300 |
| **Liabilities and Owner's Equity** | | |
| Current liabilities | | |
| Accounts payable | $ 2,800 | |
| Unearned rent revenue | 1,200 | |
| Total current liabilities | | $ 4,000 |
| Owner's equity | | |
| Owner's capital | | 18,300 |
| Total liabilities and owner's equity | | $22,300 |

## Practice Problem

**(LO 1, 2, 4)** **Financial Statement** At the end of its first month of operations, Pampered Pet Service has the following unadjusted trial balance.

*Prepare worksheet and classified balance sheet, and journalize closing entries.*

**Pampered Pet Service**
**August 31, 2020**
**Trial Balance**

| | Debit | Credit |
|---|---|---|
| Cash | $ 5,400 | |
| Accounts Receivable | 2,800 | |
| Supplies | 1,300 | |
| Prepaid Insurance | 2,400 | |
| Equipment | 60,000 | |
| Notes Payable | | $40,000 |
| Accounts Payable | | 2,400 |
| Owner's Capital | | 30,000 |
| Owner's Drawings | 1,000 | |
| Service Revenue | | 4,900 |
| Salaries and Wages Expense | 3,200 | |
| Utilities Expense | 800 | |
| Advertising Expense | 400 | |
| | $77,300 | $77,300 |

Other data:

1. Insurance expires at the rate of $200 per month.
2. $1,000 of supplies are on hand at August 31.
3. Monthly depreciation on the equipment is $900.
4. Interest of $500 on the notes payable has accrued during August.

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### Instructions

**a.** Prepare a worksheet.

**b.** Prepare a classified balance sheet assuming $35,000 of the notes payable are long-term.

**c.** Journalize the closing entries.

### Solution

**a.**

**Pampered Pet Service**
**Worksheet for the Month Ended August 31, 2020**

| Account Titles | Trial Balance Dr. | Trial Balance Cr. | Adjustments Dr. | Adjustments Cr. | Adjusted Trial Balance Dr. | Adjusted Trial Balance Cr. | Income Statement Dr. | Income Statement Cr. | Balance Sheet Dr. | Balance Sheet Cr. |
|---|---|---|---|---|---|---|---|---|---|---|
| Cash | 5,400 | | | | 5,400 | | | | 5,400 | |
| Accounts Receivable | 2,800 | | | | 2,800 | | | | 2,800 | |
| Supplies | 1,300 | | | (b) 300 | 1,000 | | | | 1,000 | |
| Prepaid Insurance | 2,400 | | | (a) 200 | 2,200 | | | | 2,200 | |
| Equipment | 60,000 | | | | 60,000 | | | | 60,000 | |
| Notes Payable | | 40,000 | | | | 40,000 | | | | 40,000 |
| Accounts Payable | | 2,400 | | | | 2,400 | | | | 2,400 |
| Owner's Capital | | 30,000 | | | | 30,000 | | | | 30,000 |
| Owner's Drawings | 1,000 | | | | 1,000 | | | | 1,000 | |
| Service Revenue | | 4,900 | | | | 4,900 | | 4,900 | | |
| Salaries and Wages Expense | 3,200 | | | | 3,200 | | 3,200 | | | |
| Utilities Expense | 800 | | | | 800 | | 800 | | | |
| Advertising Expense | 400 | | | | 400 | | 400 | | | |
| Totals | 77,300 | 77,300 | | | | | | | | |
| Insurance Expense | | | (a) 200 | | 200 | | 200 | | | |
| Supplies Expense | | | (b) 300 | | 300 | | 300 | | | |
| Depreciation Expense | | | (c) 900 | | 900 | | 900 | | | |
| Accumulated Depreciation—Equipment | | | | (c) 900 | | 900 | | | | 900 |
| Interest Expense | | | (d) 500 | | 500 | | 500 | | | |
| Interest Payable | | | | (d) 500 | | 500 | | | | 500 |
| Totals | | | 1,900 | 1,900 | 78,700 | 78,700 | 6,300 | 4,900 | 72,400 | 73,800 |
| Net Loss | | | | | | | | 1,400 | 1,400 | |
| Totals | | | | | | | 6,300 | 6,300 | 73,800 | 73,800 |

Explanation: (a) insurance expired, (b) supplies used, (c) depreciation expensed, and (d) interest accrued.

**b.**

**Pampered Pet Service**
**Balance Sheet**
**August 31, 2020**

| Assets | | |
|---|---|---|
| Current assets | | |
| Cash | $ 5,400 | |
| Accounts receivable | 2,800 | |
| Supplies | 1,000 | |
| Prepaid insurance | 2,200 | |
| Total current assets | | $11,400 |
| Property, plant, and equipment | | |
| Equipment | 60,000 | |
| Less: Accumulated depreciation—equipment | 900 | 59,100 |
| Total assets | | $70,500 |

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| Liabilities and Owner's Equity | | |
|---|---|---|
| Current liabilities | | |
| Notes payable | $ 5,000 | |
| Accounts payable | 2,400 | |
| Interest payable | 500 | |
| Total current liabilities | | $ 7,900 |
| Long-term liabilities | | |
| Notes payable | | 35,000 |
| Total liabilities | | 42,900 |
| Owner's equity | | |
| Owner's capital | | 27,600* |
| Total liabilities and owner's equity | | $70,500 |

*Owner's capital $30,000 less drawings $1,000 and net loss $1,400.

**c.**

| | | | |
|---|---|---|---|
| Aug. 31 | Service Revenue | 4,900 | |
| | Income Summary | | 4,900 |
| | (To close revenue account) | | |
| 31 | Income Summary | 6,300 | |
| | Salaries and Wages Expense | | 3,200 |
| | Depreciation Expense | | 900 |
| | Utilities Expense | | 800 |
| | Interest Expense | | 500 |
| | Advertising Expense | | 400 |
| | Supplies Expense | | 300 |
| | Insurance Expense | | 200 |
| | (To close expense accounts) | | |
| 31 | Owner's Capital ($6,300 – $4,900) | 1,400 | |
| | Income Summary | | 1,400 |
| | (To close net loss to capital) | | |
| 31 | Owner's Capital | 1,000 | |
| | Owner's Drawings | | 1,000 |
| | (To close drawings to capital) | | |

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendix to the chapter.

## Questions

**1.** "A worksheet is a permanent accounting record and its use is required in the accounting cycle." Do you agree? Explain.

**2.** Explain the purpose of the worksheet.

**3.** What is the relationship, if any, between the amount shown in the adjusted trial balance column for an account and that account's ledger balance?

**4.** If a company's revenues are $125,000 and its expenses are $113,000, in which financial statement columns of the worksheet will the net income of $12,000 appear? When expenses exceed revenues, in which columns will the difference appear?

**5.** Why is it necessary to prepare formal financial statements if all of the data are in the statement columns of the worksheet?

**6.** Identify the account(s) debited and credited in each of the four closing entries, assuming the company has net income for the year.

**7.** Describe the nature of the Income Summary account and identify the types of summary data that may be posted to this account.

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**8.** What are the content and purpose of a post-closing trial balance?

**9.** Which of the following accounts would not appear in the post-closing trial balance? Interest Payable, Equipment, Depreciation Expense, Owner's Drawings, Unearned Service Revenue, Accumulated Depreciation—Equipment, and Service Revenue.

**10.** Distinguish between a reversing entry and an adjusting entry. Are reversing entries required?

**11.** Indicate, in the sequence in which they are made, the three required steps in the accounting cycle that involve journalizing.

**12.** Identify, in the sequence in which they are prepared, the three trial balances that are used in the accounting cycles.

**13.** How do correcting entries differ from adjusting entries?

**14.** What standard classifications are used in preparing a classified balance sheet?

**15.** What is meant by the term "operating cycle?"

**16.** Define current assets. What basis is used for arranging individual items within the current assets section?

**17.** Distinguish between long-term investments and property, plant, and equipment.

**18.** (a) What is the term used to describe the owner's equity section of a corporation? (b) Identify the two owners' equity accounts in a corporation and indicate the purpose of each.

**19.** Using **Apple**'s annual report, determine its current liabilities at September 27, 2014, and September 26, 2015. Were current liabilities higher or lower than current assets in these two years?

***20.** Cigale Company prepares reversing entries. If the adjusting entry for interest payable is reversed, what type of an account balance, if any, will there be in Interest Payable and Interest Expense after the reversing entry is posted?

***21.** At December 31, accrued salaries payable totaled $3,500. On January 10, total salaries of $8,000 are paid. (a) Assume that reversing entries are made at January 1. Give the January 10 entry, and indicate the Salaries and Wages Expense account balance after the entry is posted. (b) Repeat part (a) assuming reversing entries are not made.

## Brief Exercises

*List the steps in preparing a worksheet.*

**BE4.1 (LO 1)** The steps in using a worksheet are presented in random order below. List the steps in the proper order by placing numbers 1–5 in the blank spaces.

**a.** _____ Prepare a trial balance on the worksheet.
**b.** _____ Enter adjusted balances.
**c.** _____ Extend adjusted balances to appropriate statement columns.
**d.** _____ Total the statement columns, compute net income (loss), and complete the worksheet.
**e.** _____ Enter adjustment data.

*Prepare partial worksheet.*

**BE4.2 (LO 1)** The ledger of Walters Company includes the following unadjusted balances: Prepaid Insurance $3,000, Service Revenue $60,000, and Salaries and Wages Expense $25,000. Adjusting entries are required for (a) expired insurance $1,800, (b) services performed $1,100 are billed and not yet collected, and (c) accrued salaries payable $900. Enter the unadjusted balances and adjustments into a worksheet and complete the worksheet for all accounts. (*Note:* You will need to add the following accounts: Accounts Receivable, Salaries and Wages Payable, and Insurance Expense.)

*Identify worksheet columns for selected accounts.*

**BE4.3 (LO 1)** The following selected accounts appear in the adjusted trial balance columns of the worksheet for Ashram Company: Accumulated Depreciation, Depreciation Expense, Owner's Capital, Owner's Drawings, Service Revenue, Supplies, and Accounts Payable. Indicate the financial statement column (income statement Dr., balance sheet Cr., etc.) to which each balance should be extended.

*Prepare closing entries from ledger balances.*

**BE4.4 (LO 2)** The ledger of Pitt Company contains the following balances: Owner's Capital $30,000, Owner's Drawings $2,000, Service Revenue $58,000, Salaries and Wages Expense $39,000, and Supplies Expense $7,000. Prepare the closing entries at December 31.

*Post closing entries; underline and balance T-accounts.*

**BE4.5 (LO 2)** Using the data in BE4.4, enter the balances in T-accounts, post the closing entries, and underline and balance the accounts.

*Journalize and post closing entries using the three-column form of account.*

**BE4.6 (LO 2)** The income statement for Salt Creek Golf Club for the month ending July 31 shows Service Revenue $17,800, Salaries and Wages Expense $9,600, Maintenance and Repairs Expense $2,500, and Net Income $5,700. Prepare the entries to close the revenue and expense accounts. Post the entries to the revenue and expense accounts, and complete the closing process for these accounts using the three-column form of account.

*Identify post-closing trial balance accounts.*

**BE4.7 (LO 2)** Using the data in BE4.3, identify the accounts that would be included in a post-closing trial balance.

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**BE4.8 (LO 3)** The steps in the accounting cycle are listed in random order below. List the steps in proper sequence, assuming no worksheet is prepared, by placing numbers 1–9 in the blank spaces.

*List the required steps in the accounting cycle in sequence.*

**a.** _____ Prepare a trial balance.
**b.** _____ Journalize the transactions.
**c.** _____ Journalize and post closing entries.
**d.** _____ Prepare financial statements.
**e.** _____ Journalize and post adjusting entries.
**f.** _____ Post to ledger accounts.
**g.** _____ Prepare a post-closing trial balance.
**h.** _____ Prepare an adjusted trial balance.
**i.** _____ Analyze business transactions.

**BE4.9 (LO 3)** At Raymond Company, the following errors were discovered after the transactions had been journalized and posted. Prepare the correcting entries.

*Prepare correcting entries.*

1. A collection on account from a customer for $870 was recorded as a debit to Cash $870 and a credit to Service Revenue $870.
2. The purchase of store supplies on account for $1,510 was recorded as a debit to Supplies $1,150 and a credit to Accounts Payable $1,150.

**BE4.10 (LO 4)** **Financial Statement** The balance sheet debit column of the worksheet for Jolie Company includes the following accounts: Accounts Receivable $12,500, Prepaid Insurance $4,500, Cash $4,100, Supplies $5,200, and Debt Investments (short-term) $7,600. Prepare the current assets section of the balance sheet, listing the accounts in proper sequence.

*Prepare the current assets section of a balance sheet.*

**BE4.11 (LO 4)** The following are the major balance sheet classifications:

*Classify accounts on balance sheet.*

| | |
|---|---|
| Current assets (CA) | Current liabilities (CL) |
| Long-term investments (LTI) | Long-term liabilities (LTL) |
| Property, plant, and equipment (PPE) | Owner's equity (OE) |
| Intangible assets (IA) | |

Match each of the following accounts to its proper balance sheet classification.

| | |
|---|---|
| _____ Accounts payable | _____ Income taxes payable |
| _____ Accounts receivable | _____ Debt investments (long-term) |
| _____ Accumulated depreciation—buildings | _____ Land |
| _____ Buildings | _____ Inventory |
| _____ Cash | _____ Patents |
| _____ Copyrights | _____ Supplies |

***BE4.12 (LO 5)** At October 31, Miras Company made an accrued expense adjusting entry of $3,300 for salaries. Prepare the reversing entry on November 1, and indicate the balances in Salaries and Wages Payable and Salaries and Wages Expense after posting the reversing entry.

*Prepare reversing entries.*

## DO IT! Exercises

**DO IT! 4.1 (LO 1)** Jordan Carr is preparing a worksheet. Explain to Jordan how he should extend the following adjusted trial balance accounts to the financial statement columns of the worksheet.

*Prepare a worksheet.*

| | |
|---|---|
| Service Revenue | Accounts Receivable |
| Notes Payable | Accumulated Depreciation |
| Owner's Capital | Utilities Expense |

**DO IT! 4.2 (LO2)** Paloma Company shows the following balances in selected accounts of its adjusted trial balance.

*Prepare closing entries.*

| | | | |
|---|---|---|---|
| Supplies | $32,000 | Service Revenue | $108,000 |
| Supplies Expense | 6,000 | Salaries and Wages Expense | 40,000 |
| Accounts Receivable | 12,000 | Utilities Expense | 8,000 |
| Owner's Drawings | 22,000 | Rent Expense | 18,000 |
| Owner's Capital | 70,000 | | |

Prepare the closing entries at December 31.

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*Prepare correcting entries.*

**DO IT! 4.3 (LO 3)** Hanson Company has an inexperienced accountant. During the first month on the job, the accountant made the following errors in journalizing transactions. All entries were posted as made.

1. The purchase of supplies for $650 cash was debited to Equipment $210 and credited to Cash $210.
2. A $500 withdrawal of cash for B. Hanson's personal use was debited to Salaries and Wages Expense $900 and credited to Cash $900.
3. A payment on account of $820 to a creditor was debited to Accounts Payable $280 and credited to Cash $280.

Prepare the correcting entries.

*Match accounts to balance sheet classifications.*

**DO IT! 4.4 (LO 4)** The following accounts were taken from the financial statements of Giles Company.

_____ Interest revenue
_____ Utilities payable
_____ Accounts payable
_____ Supplies
_____ Bonds payable
_____ Goodwill
_____ Owner's capital
_____ Accumulated depreciation—equipment
_____ Equipment
_____ Salaries and wages expense
_____ Debt investments (long-term)
_____ Unearned rent revenue

Match each of the accounts to its proper balance sheet classification, as shown below. If the item would not appear on a balance sheet, use "NA."

Current assets (CA)
Long-term investments (LTI)
Property, plant, and equipment (PPE)
Intangible assets (IA)
Current liabilities (CL)
Long-term liabilities (LTL)
Owner's equity (OE)

## Exercises

*Complete the worksheet.*

**E4.1 (LO 1, 3)** The trial balance columns of the worksheet for Dixon Company at June 30, 2020, are as follows.

**Dixon Company**
**Worksheet**
**For the Month Ended June 30, 2020**

| | Trial Balance | |
|---|---|---|
| **Account Titles** | **Dr.** | **Cr.** |
| Cash | 2,320 | |
| Accounts Receivable | 2,440 | |
| Supplies | 1,880 | |
| Accounts Payable | | 1,120 |
| Unearned Service Revenue | | 240 |
| Owner's Capital | | 3,600 |
| Service Revenue | | 2,400 |
| Salaries and Wages Expense | 560 | |
| Miscellaneous Expense | 160 | |
| | 7,360 | 7,360 |

Other data:

1. A physical count reveals $500 of supplies on hand.
2. $100 of the unearned revenue is still unearned at month-end.
3. Accrued salaries are $210.

### Instructions

Enter the trial balance on a worksheet and complete the worksheet.

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**E4.2 (LO 1)** The adjusted trial balance columns of the worksheet for Auburn Company are as follows.

*Complete the worksheet.*

Excel

**Auburn Company**
**Worksheet (partial)**
**For the Month Ended April 30, 2020**

| | Adjusted Trial Balance | | Income Statement | | Balance Sheet | |
|---|---|---|---|---|---|---|
| **Account Titles** | **Dr.** | **Cr.** | **Dr.** | **Cr.** | **Dr.** | **Cr.** |
| Cash | 10,000 | | | | | |
| Accounts Receivable | 7,840 | | | | | |
| Prepaid Rent | 2,280 | | | | | |
| Equipment | 23,050 | | | | | |
| Accumulated Depreciation—Equip. | | 4,900 | | | | |
| Notes Payable | | 5,700 | | | | |
| Accounts Payable | | 4,920 | | | | |
| Owner's Capital | | 27,960 | | | | |
| Owner's Drawings | 3,650 | | | | | |
| Service Revenue | | 15,590 | | | | |
| Salaries and Wages Expense | 10,840 | | | | | |
| Rent Expense | 760 | | | | | |
| Depreciation Expense | 650 | | | | | |
| Interest Expense | 57 | | | | | |
| Interest Payable | | 57 | | | | |
| Totals | 59,127 | 59,127 | | | | |

### Instructions

Complete the worksheet.

**E4.3 (LO 1, 4)** Financial Statement Worksheet data for Auburn Company are presented in E4.2. The owner did not make any additional investments in the business in April.

*Prepare financial statements from worksheet.*

Excel

### Instructions

Prepare an income statement, an owner's equity statement, and a classified balance sheet.

**E4.4 (LO 2)** Worksheet data for Auburn Company are presented in E4.2.

*Journalize and post closing entries and prepare a post-closing trial balance.*

### Instructions

**a.** Journalize the closing entries at April 30.

**b.** Post the closing entries to Income Summary and Owner's Capital. Use T-accounts.

**c.** Prepare a post-closing trial balance at April 30.

**E4.5 (LO 1)** The adjustments columns of the worksheet for Becker Company are shown below.

*Prepare adjusting entries from a worksheet, and extend balances to worksheet columns.*

| | Adjustments | |
|---|---|---|
| **Account Titles** | **Debit** | **Credit** |
| Accounts Receivable | 1,100 | |
| Prepaid Insurance | | 300 |
| Accumulated Depreciation—Equipment | | 900 |
| Salaries and Wages Payable | | 500 |
| Service Revenue | | 1,100 |
| Salaries and Wages Expense | 500 | |
| Insurance Expense | 300 | |
| Depreciation Expense | 900 | |
| | 2,800 | 2,800 |

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**Instructions**

**a.** Prepare the adjusting entries.

**b.** Assuming the adjusted trial balance amount for each account is normal, indicate the financial statement column to which each balance should be extended.

*Derive adjusting entries from worksheet data.*

**E4.6 (LO 1)** Selected worksheet data for Bonita Company are presented below.

| Account Titles | Trial Balance | | Adjusted Trial Balance | |
|---|---|---|---|---|
| | Dr. | Cr. | Dr. | Cr. |
| Accounts Receivable | ? | | 34,000 | |
| Prepaid Insurance | 26,000 | | 20,000 | |
| Supplies | 7,000 | | ? | |
| Accumulated Depreciation—Equipment | | 12,000 | | ? |
| Salaries and Wages Payable | | ? | | 5,600 |
| Service Revenue | | 88,000 | | 97,000 |
| Insurance Expense | | | ? | |
| Depreciation Expense | | | 10,000 | |
| Supplies Expense | | | 4,500 | |
| Salaries and Wages Expense | ? | | 49,000 | |

**Instructions**

**a.** Fill in the missing amounts.

**b.** Prepare the adjusting entries that were made.

*Prepare closing entries, and prepare a post-closing trial balance.*

**E4.7 (LO 2)** Victoria Lee Company had the following adjusted trial balance.

**Victoria Lee Company**
**Adjusted Trial Balance**
**For the Month Ended June 30, 2020**

| Account Titles | Adjusted Trial Balance | |
|---|---|---|
| | Debit | Credit |
| Cash | $ 3,712 | |
| Accounts Receivable | 3,904 | |
| Supplies | 480 | |
| Accounts Payable | | $ 1,382 |
| Unearned Service Revenue | | 160 |
| Owner's Capital | | 5,760 |
| Owner's Drawings | 550 | |
| Service Revenue | | 4,300 |
| Salaries and Wages Expense | 1,260 | |
| Miscellaneous Expense | 256 | |
| Supplies Expense | 1,900 | |
| Salaries and Wages Payable | | 460 |
| | $12,062 | $12,062 |

**Instructions**

**a.** Prepare closing entries at June 30, 2020.

**b.** Prepare a post-closing trial balance.

*Journalize and post closing entries, and prepare a post-closing trial balance.*

**E4.8 (LO 2)** Phoebe Company ended its fiscal year on July 31, 2020. The company's adjusted trial balance as of the end of its fiscal year is as follows.

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**Phoebe Company**
**Adjusted Trial Balance**
**July 31, 2020**

| No. | Account Titles | Debit | Credit |
|---|---|---|---|
| 101 | Cash | $ 9,840 | |
| 112 | Accounts Receivable | 8,780 | |
| 157 | Equipment | 15,900 | |
| 158 | Accumulated Depreciation—Equip. | | $ 7,400 |
| 201 | Accounts Payable | | 4,220 |
| 208 | Unearned Rent Revenue | | 1,800 |
| 301 | Owner's Capital | | 45,200 |
| 306 | Owner's Drawings | 16,000 | |
| 400 | Service Revenue | | 64,000 |
| 429 | Rent Revenue | | 6,500 |
| 711 | Depreciation Expense | 8,000 | |
| 726 | Salaries and Wages Expense | 55,700 | |
| 732 | Utilities Expense | 14,900 | |
| | | $129,120 | $129,120 |

### Instructions

**a.** Prepare the closing entries using page J15.

**b.** Post to Owner's Capital and No. 350 Income Summary accounts. (Use the three-column form.)

**c.** Prepare a post-closing trial balance at July 31.

**E4.9 (LO 4)** **Financial Statement** The adjusted trial balance for Phoebe Company is presented in E4.8. *Prepare financial statements.*

### Instructions

**a.** Prepare an income statement and an owner's equity statement for the year. Phoebe did not make any capital investments during the year.

**b.** Prepare a classified balance sheet at July 31.

**E4.10 (LO 3)** Ray Louis has prepared the following list of statements about the accounting cycle. *Answer questions related to the accounting cycle.*

1. "Journalize the transactions" is the first step in the accounting cycle.
2. Reversing entries are a required step in the accounting cycle.
3. Correcting entries do not have to be part of the accounting cycle.
4. If a worksheet is prepared, some steps of the accounting cycle are incorporated into the worksheet.
5. The accounting cycle begins with the analysis of business transactions and ends with the preparation of a post-closing trial balance.
6. All steps of the accounting cycle occur daily during the accounting period.
7. The step of "post to the ledger accounts" occurs before the step of "journalize the transactions."
8. Closing entries must be prepared before financial statements can be prepared.

### Instructions

Identify each statement as true or false. If false, indicate how to correct the statement.

**E4.11 (LO 2)** Selected accounts for Tamora's Salon are presented below. All June 30 postings are from closing entries. *Prepare closing entries.*

**Salaries and Wages Expense**

| | | | |
|---|---|---|---|
| 6/10 | 3,200 | | |
| 6/28 | 5,600 | | |
| Bal. | 8,800 | 6/30 | 8,800 |

**Service Revenue**

| | | | |
|---|---|---|---|
| | | 6/15 | 9,700 |
| | | 6/24 | 8,400 |
| 6/30 | 18,100 | Bal. | 18,100 |

**Owner's Capital**

| | | | |
|---|---|---|---|
| 6/30 | 2,500 | 6/1 | 12,000 |
| | | 6/30 | 5,000 |
| | | Bal. | 14,500 |

**Supplies Expense**

| | | | |
|---|---|---|---|
| 6/12 | 600 | | |
| 6/24 | 700 | | |
| Bal. | 1,300 | 6/30 | 1,300 |

**Rent Expense**

| | | | |
|---|---|---|---|
| 6/1 | 3,000 | | |
| Bal. | 3,000 | 6/30 | 3,000 |

**Owner's Drawings**

| | | | |
|---|---|---|---|
| 6/13 | 1,000 | | |
| 6/25 | 1,500 | | |
| Bal. | 2,500 | 6/30 | 2,500 |

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**Instructions**

**a.** Prepare the closing entries that were made.

**b.** Post the closing entries to Income Summary.

*Prepare correcting entries.*

**E4.12 (LO 3)** Blair Natt Company discovered the following errors made in January 2020.

1. A payment of Salaries and Wages Expense of $700 was debited to Equipment and credited to Cash, both for $700.
2. A collection of $1,500 from a client on account was debited to Cash $150 and credited to Service Revenue $150.
3. The purchase of equipment on account for $670 was debited to Equipment $760 and credited to Accounts Payable $760.

**Instructions**

**a.** Correct the errors by reversing the incorrect entry and preparing the correct entry.

**b.** Correct the errors without reversing the incorrect entry.

*Prepare correcting entries.*

**E4.13 (LO 3)** Patel Company has an inexperienced accountant. During the first 2 weeks on the job, the accountant made the following errors in journalizing transactions. All entries were posted as made.

1. A payment on account of $750 to a creditor was debited to Accounts Payable $570 and credited to Cash $570.
2. The purchase of supplies on account for $560 was debited to Equipment $56 and credited to Accounts Payable $56.
3. A $500 withdrawal of cash for N. Patel's personal use was debited to Salaries and Wages Expense $500 and credited to Cash $500.

**Instructions**

Prepare the correcting entries.

*Prepare a classified balance sheet.*

**E4.14 (LO 4)** **Writing** **Financial Statement** The adjusted trial balance for Carter Bowling Alley at December 31, 2020, contains the following accounts.

| | Debit | | Credit |
|---|---|---|---|
| Buildings | $128,800 | Owner's Capital | $113,000 |
| Accounts Receivable | 14,520 | Accumulated Depreciation—Buildings | 42,600 |
| Prepaid Insurance | 4,680 | Accounts Payable | 12,300 |
| Cash | 18,040 | Notes Payable | 97,780 |
| Equipment | 62,400 | Accumulated Depreciation—Equipment | 18,720 |
| Land | 65,000 | Interest Payable | 3,800 |
| Insurance Expense | 780 | Service Revenue | 17,180 |
| Depreciation Expense | 7,360 | | $305,380 |
| Interest Expense | 3,800 | | |
| | $305,380 | | |

**Instructions**

**a.** Prepare a classified balance sheet; assume that $30,000 of the note payable will be paid in 2021.

**b.** Comment on the liquidity of the company.

*Classify accounts on balance sheet.*

**E4.15 (LO 4)** The following are the major balance sheet classifications.

Current assets (CA)
Long-term investments (LTI)
Property, plant, and equipment (PPE)
Intangible assets (IA)
Current liabilities (CL)
Long-term liabilities (LTL)
Owner's equity (OE)

**Instructions**

Classify each of the following accounts taken from Faust Company's balance sheet.

_____ Accounts payable
_____ Accounts receivable
_____ Cash
_____ Owner's capital
_____ Patents
_____ Salaries and wages payable
_____ Inventory
_____ Stock investments (to be sold in 7 months)
_____ Accumulated depreciation—equipment
_____ Buildings
_____ Land (in use)
_____ Notes payable (due in 2 years)
_____ Supplies
_____ Equipment
_____ Prepaid expenses

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**E4.16 (LO 4)** **Financial Statement** The following items were taken from the financial statements of P. Jimenez Company. (All amounts are in thousands.)

*Prepare a classified balance sheet.*

| | | | |
|---|---|---|---|
| Long-term debt | $ 1,000 | Accumulated depreciation—equipment | $ 5,655 |
| Prepaid insurance | 650 | Accounts payable | 1,214 |
| Equipment | 11,500 | Notes payable (due after 2021) | 400 |
| Stock investments (long-term) | 264 | Owner's capital | 12,955 |
| Debt investments (short-term) | 3,690 | Accounts receivable | 1,696 |
| Notes payable (due in 2021) | 500 | Inventory | 1,256 |
| Cash | 2,668 | | |

**Instructions**

Prepare a classified balance sheet in good form as of December 31, 2020.

**E4.17 (LO 4)** **Financial Statement** These financial statement items are for Basten Company at year-end, July 31, 2020.

*Prepare financial statements.*

| | | | |
|---|---|---|---|
| Salaries and wages payable | $ 2,080 | Notes payable (long-term) | $ 1,800 |
| Salaries and wages expense | 48,700 | Cash | 14,200 |
| Utilities expense | 22,600 | Accounts receivable | 9,780 |
| Equipment | 34,400 | Accumulated depreciation—equipment | 6,000 |
| Accounts payable | 4,100 | Owner's drawings | 3,000 |
| Service revenue | 63,000 | Depreciation expense | 4,000 |
| Rent revenue | 8,500 | Owner's capital (beginning of the year) | 51,200 |

**Instructions**

**a.** Prepare an income statement and an owner's equity statement for the year. The owner did not make any new investments during the year.

**b.** Prepare a classified balance sheet at July 31.

***E4.18 (LO 5)** Krantz Company pays salaries of $15,000 every Monday for the preceding 5-day week (Monday through Friday). Assume December 31 falls on a Tuesday, so Krantz's employees have worked 2 days without being paid at the end of the fiscal year.

*Use reversing entries.*

**Instructions**

**a.** Assume the company does not use reversing entries. Prepare the December 31 adjusting entry and the entry on Monday, January 6, when Krantz pays the payroll.

**b.** Assume the company does use reversing entries. Prepare the December 31 adjusting entry, the January 1 reversing entry, and the entry on Monday, January 6, when Krantz pays the payroll.

***E4.19 (LO 2, 5)** On December 31, the adjusted trial balance of Shihata Employment Agency shows the following selected data.

*Prepare closing and reversing entries.*

| | | | |
|---|---|---|---|
| Accounts Receivable | $24,500 | Service Revenue | $92,500 |
| Interest Expense | 7,700 | Interest Payable | 2,200 |

Analysis shows that adjusting entries were made to (1) accrue $5,000 of service revenue and (2) accrue $2,200 interest expense.

**Instructions**

**a.** Prepare the closing entries for the temporary accounts shown above at December 31.

**b.** Prepare the reversing entries on January 1.

**c.** Post the entries in (a) and (b). Underline and balance the accounts. (Use T-accounts.)

**d.** Prepare the entries to record (1) the collection of the accrued revenue on January 10 and (2) the payment of all interest due ($3,000) on January 15.

**e.** Post the entries in (d) to the temporary accounts.

## Problems: Set A

**P4.1A (LO 1, 2, 4)** **Financial Statement** The trial balance columns of the worksheet for Warren Roofing at March 31, 2020, are as follows.

*Prepare a worksheet, financial statements, and adjusting and closing entries.*

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**Warren Roofing**
**Worksheet**
**For the Month Ended March 31, 2020**

| Account Titles | Trial Balance Dr. | Trial Balance Cr. |
|---|---|---|
| Cash | 4,500 | |
| Accounts Receivable | 3,200 | |
| Supplies | 2,000 | |
| Equipment | 11,000 | |
| Accumulated Depreciation—Equipment | | 1,250 |
| Accounts Payable | | 2,500 |
| Unearned Service Revenue | | 550 |
| Owner's Capital | | 12,900 |
| Owner's Drawings | 1,100 | |
| Service Revenue | | 6,300 |
| Salaries and Wages Expense | 1,300 | |
| Miscellaneous Expense | 400 | |
| | 23,500 | 23,500 |

Other data:

1. A physical count reveals only $480 of roofing supplies on hand.
2. Depreciation for March is $250.
3. Unearned revenue amounted to $260 at March 31.
4. Accrued salaries are $700.

## Instructions

a. Adjusted trial balance $24,450
b. Net income $2,420
Total assets $17,680

**a.** Enter the trial balance on a worksheet and complete the worksheet.
**b.** Prepare an income statement and owner's equity statement for the month of March and a classified balance sheet at March 31. T. Warren made an additional investment in the business of $10,000 in March.
**c.** Journalize the adjusting entries from the adjustments columns of the worksheet.
**d.** Journalize the closing entries from the financial statement columns of the worksheet.

*Complete worksheet; prepare financial statements, closing entries, and post-closing trial balance.*

GLS

**P4.2A (LO 1, 2, 4) Financial Statement** The adjusted trial balance columns of the worksheet for Nguyen Company, owned by C. Nguyen, are as follows.

**Nguyen Company**
**Worksheet**
**For the Year Ended December 31, 2020**

| Account No. | Account Titles | Adjusted Trial Balance Dr. | Adjusted Trial Balance Cr. |
|---|---|---|---|
| 101 | Cash | 5,300 | |
| 112 | Accounts Receivable | 10,800 | |
| 126 | Supplies | 1,500 | |
| 130 | Prepaid Insurance | 2,000 | |
| 157 | Equipment | 27,000 | |
| 158 | Accumulated Depreciation—Equipment | | 5,600 |
| 200 | Notes Payable | | 15,000 |
| 201 | Accounts Payable | | 6,100 |
| 212 | Salaries and Wages Payable | | 3,600 |
| 230 | Interest Payable | | 600 |
| 301 | Owner's Capital | | 13,000 |
| 306 | Owner's Drawings | 7,600 | |
| 400 | Service Revenue | | 61,000 |
| 610 | Advertising Expense | 9,000 | |
| 631 | Supplies Expense | 4,000 | |
| 711 | Depreciation Expense | 5,600 | |
| 722 | Insurance Expense | 3,500 | |
| 726 | Salaries and Wages Expense | 28,000 | |
| 905 | Interest Expense | 600 | |
| | Totals | 104,900 | 104,900 |

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**Instructions**

**a.** Complete the worksheet by extending the balances to the financial statement columns.

**b.** Prepare an income statement, owner's equity statement, and a classified balance sheet. (*Note:* $4,000 of the notes payable become due in 2021.) C. Nguyen did not make any additional investments in the business during the year.

**c.** Prepare the closing entries. Use J14 for the journal page.

**d.** Post the closing entries. Use the three-column form of account. Income Summary is No. 350.

**e.** Prepare a post-closing trial balance.

a. Net income $10,300

b. Current assets $19,600
Current liabilities $14,300

e. Post-closing trial balance $46,600

**P4.3A (LO 1, 2, 4) Financial Statement** The completed financial statement columns of the worksheet for Bray Company are shown as follows.

*Prepare financial statements, closing entries, and post-closing trial balance.*

**Bray Company**
**Worksheet**
**For the Year Ended December 31, 2020**

| Account No. | Account Titles | Income Statement Dr. | Income Statement Cr. | Balance Sheet Dr. | Balance Sheet Cr. |
|---|---|---|---|---|---|
| 101 | Cash | | | 8,800 | |
| 112 | Accounts Receivable | | | 10,800 | |
| 130 | Prepaid Insurance | | | 2,800 | |
| 157 | Equipment | | | 24,000 | |
| 158 | Accumulated Depreciation—Equip. | | | | 4,200 |
| 201 | Accounts Payable | | | | 9,000 |
| 212 | Salaries and Wages Payable | | | | 2,400 |
| 301 | Owner's Capital | | | | 19,500 |
| 306 | Owner's Drawings | | | 11,000 | |
| 400 | Service Revenue | | 60,000 | | |
| 622 | Maintenance and Repairs Expense | 1,700 | | | |
| 711 | Depreciation Expense | 2,800 | | | |
| 722 | Insurance Expense | 1,800 | | | |
| 726 | Salaries and Wages Expense | 30,000 | | | |
| 732 | Utilities Expense | 1,400 | | | |
| | Totals | 37,700 | 60,000 | 57,400 | 35,100 |
| | Net Income | 22,300 | | | 22,300 |
| | | 60,000 | 60,000 | 57,400 | 57,400 |

**Instructions**

**a.** Prepare an income statement, an owner's equity statement, and a classified balance sheet.

**b.** Prepare the closing entries. L. Bray did not make any additional investments during the year.

**c.** Post the closing entries and underline and balance the accounts. (Use T-accounts.) Income Summary is account No. 350.

**d.** Prepare a post-closing trial balance.

a. Ending capital $30,800
Total current assets $22,400

d. Post-closing trial balance $46,400

**P4.4A (LO 1, 2, 4) Financial Statement** Rusthe Management Services began business on January 1, 2020, with a capital investment of $120,000. The company manages condominiums for owners (Service Revenue) and rents space in its own office building (Rent Revenue). The trial balance and adjusted trial balance columns of the worksheet at the end of the first year are as follows.

*Complete worksheet; prepare classified balance sheet, entries, and post-closing trial balance.*

**Rusthe Management Services**
**Worksheet**
**For the Year Ended December 31, 2020**

| Account Titles | Trial Balance Dr. | Trial Balance Cr. | Adjusted Trial Balance Dr. | Adjusted Trial Balance Cr. |
|---|---|---|---|---|
| Cash | 13,800 | | 13,800 | |
| Accounts Receivable | 28,300 | | 28,300 | |
| Prepaid Insurance | 3,600 | | 2,100 | |
| Land | 67,000 | | 67,000 | |
| Buildings | 127,000 | | 127,000 | |

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| Account Titles | Trial Balance Dr. | Trial Balance Cr. | Adjusted Trial Balance Dr. | Adjusted Trial Balance Cr. |
|---|---|---|---|---|
| Equipment | 59,000 | | 59,000 | |
| Accounts Payable | | 12,500 | | 12,500 |
| Unearned Rent Revenue | | 6,000 | | 1,000 |
| Mortgage Payable | | 120,000 | | 120,000 |
| Owner's Capital | | 144,000 | | 144,000 |
| Owner's Drawings | 22,000 | | 22,000 | |
| Service Revenue | | 90,700 | | 90,700 |
| Rent Revenue | | 29,000 | | 34,000 |
| Salaries and Wages Expense | 42,000 | | 42,000 | |
| Advertising Expense | 20,500 | | 20,500 | |
| Utilities Expense | 19,000 | | 19,000 | |
| Totals | 402,200 | 402,200 | | |
| Insurance Expense | | | 1,500 | |
| Depreciation Expense | | | 6,600 | |
| Accumulated Depreciation—Buildings | | | | 3,000 |
| Accumulated Depreciation—Equipment | | | | 3,600 |
| Interest Expense | | | 10,000 | |
| Interest Payable | | | | 10,000 |
| Totals | | | 418,800 | 418,800 |

### Instructions

a. Net income $25,100

b. Total current assets $44,200

**a.** Prepare a complete worksheet.

**b.** Prepare a classified balance sheet. (*Note:* $45,000 of the mortgage note payable is due for payment next year.)

**c.** Journalize the adjusting entries.

**d.** Journalize the closing entries.

e. Post-closing trial balance $297,200

**e.** Prepare a post-closing trial balance.

**P4.5A (LO 1, 2, 4)** Anya Clark opened Anya's Cleaning Service on July 1, 2020. During July, the following transactions were completed.

*Complete all steps in accounting cycle.*

GLS

| | | |
|---|---|---|
| July | 1 | Anya invested $20,000 cash in the business. |
| | 1 | Purchased used truck for $12,000, paying $4,000 cash and the balance on account. |
| | 3 | Purchased cleaning supplies for $2,100 on account. |
| | 5 | Paid $1,800 cash on a 1-year insurance policy effective July 1. |
| | 12 | Billed customers $4,500 for cleaning services. |
| | 18 | Paid $1,500 cash on amount owed on truck and $1,400 on amount owed on cleaning supplies. |
| | 20 | Paid $2,800 cash for employee salaries. |
| | 21 | Collected $3,400 cash from customers billed on July 12. |
| | 25 | Billed customers $6,000 for cleaning services. |
| | 31 | Paid $350 for the monthly gasoline bill for the truck. |
| | 31 | Withdraw $5,600 cash for personal use. |

The chart of accounts for Anya's Cleaning Service contains the following accounts: No. 101 Cash, No. 112 Accounts Receivable, No. 126 Supplies, No. 130 Prepaid Insurance, No. 157 Equipment, No. 158 Accumulated Depreciation—Equipment, No. 201 Accounts Payable, No. 212 Salaries and Wages Payable, No. 301 Owner's Capital, No. 306 Owner's Drawings, No. 350 Income Summary, No. 400 Service Revenue, No. 631 Supplies Expense, No. 633 Gasoline Expense, No. 711 Depreciation Expense, No. 722 Insurance Expense, and No. 726 Salaries and Wages Expense.

### Instructions

**a.** Journalize and post the July transactions. Use page J1 for the journal and the three-column form of account.

b. Trial balance $37,700

**b.** Prepare a trial balance at July 31 on a worksheet.

c. Adjusted trial balance $41,900

**c.** Enter the following adjustments on the worksheet and complete the worksheet.

**1.** Unbilled and uncollected revenue for services performed at July 31 were $2,700.

**2.** Depreciation on equipment for the month was $500.

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3. One-twelfth of the insurance expired.
4. An inventory count shows $600 of cleaning supplies on hand at July 31.
5. Accrued but unpaid employee salaries were $1,000.

**d.** Prepare the income statement and owner's equity statement for July and a classified balance sheet at July 31.

d. Net income $6,900
Total assets $29,500

**e.** Journalize and post adjusting entries. Use page J2 for the journal.

**f.** Journalize and post closing entries and complete the closing process. Use page J3 for the journal.

**g.** Prepare a post-closing trial balance at July 31.

g. Post-closing trial balance $30,000

**P4.6A (LO 3)** Horace Culpepper, CPA, was retained by Pulsar Cable to prepare financial statements for April 2020. Horace accumulated all the ledger balances per Pulsar's records and found the following.

*Analyze errors and prepare correcting entries and trial balance.*

**Pulsar Cable**
**Trial Balance**
**April 30, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $ 4,100 | |
| Accounts Receivable | 3,200 | |
| Supplies | 800 | |
| Equipment | 10,800 | |
| Accumulated Depreciation—Equip. | | $ 1,350 |
| Accounts Payable | | 2,100 |
| Salaries and Wages Payable | | 700 |
| Unearned Service Revenue | | 890 |
| Owner's Capital | | 12,900 |
| Service Revenue | | 5,650 |
| Salaries and Wages Expense | 3,300 | |
| Advertising Expense | 600 | |
| Miscellaneous Expense | 290 | |
| Depreciation Expense | 500 | |
| | $23,590 | $23,590 |

Horace Culpepper then reviewed the records and found the following errors.

1. Cash received from a customer on account was recorded as $950 instead of $590.
2. A payment of $75 for advertising expense was entered as a debit to Miscellaneous Expense $75 and a credit to Cash $75.
3. The first salary payment in April was for $1,900, which included $900 of salaries payable on March 31. The payment was recorded as a debit to Salaries and Wages Expense $1,900 and a credit to Cash $1,900. (No reversing entries were made on April 1.)
4. The purchase on account of a printer costing $510 was recorded as a debit to Supplies and a credit to Accounts Payable for $510.
5. A cash payment of repair expense on equipment for $96 was recorded as a debit to Equipment $69 and a credit to Cash $69.

**Instructions**

**a.** Prepare an analysis of each error showing (1) the incorrect entry, (2) the correct entry, and (3) the correcting entry. Items 4 and 5 occurred on April 30, 2020.

**b.** Prepare a correct trial balance.

b. Trial balance $22,890

## Continuing Case

### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 3.)

**CC4** Natalie had a very busy December. At the end of the month, after journalizing and posting the December transactions and adjusting entries, Natalie prepared the following adjusted trial balance.

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**Cookie Creations**
**Adjusted Trial Balance**
**December 31, 2019**

| | Debit | Credit |
|---|---|---|
| Cash | $1,180 | |
| Accounts Receivable | 875 | |
| Supplies | 350 | |
| Prepaid Insurance | 1,210 | |
| Equipment | 1,200 | |
| Accumulated Depreciation—Equipment | | $ 40 |
| Accounts Payable | | 75 |
| Salaries and Wages Payable | | 56 |
| Interest Payable | | 15 |
| Unearned Service Revenue | | 300 |
| Notes Payable | | 2,000 |
| Owner's Capital | | 800 |
| Owner's Drawings | 500 | |
| Service Revenue | | 4,515 |
| Salaries and Wages Expense | 1,006 | |
| Utilities Expense | 125 | |
| Advertising Expense | 165 | |
| Supplies Expense | 1,025 | |
| Depreciation Expense | 40 | |
| Insurance Expense | 110 | |
| Interest Expense | 15 | |
| | $7,801 | $7,801 |

### Instructions

Using the information in the adjusted trial balance, do the following.

**a.** Prepare an income statement and an owner's equity statement for the 2 months ended December 31, 2019, and a classified balance sheet at December 31, 2019. The note payable has a stated interest rate of 6%, and the principal and interest are due on November 16, 2021.

**b.** Natalie has decided that her year-end will be December 31, 2019. Prepare and post closing entries as of December 31, 2019.

**c.** Prepare a post-closing trial balance.

## Ethics Case

**EC4** As the controller of Take No Prisoners Perfume Company, you discover a misstatement that overstated net income in the prior year's financial statements. The misleading financial statements appear in the company's annual report which was issued to banks and other creditors less than a month ago. After much thought about the consequences of telling the president, Mike Flanary, about this misstatement, you gather your courage to inform him. Mike says, "Hey! What they don't know won't hurt them. But, just so we set the record straight, we'll adjust this year's financial statements for last year's misstatement. We can absorb that misstatement better in this year than in last year anyway! Just don't make such a mistake again."

### Instructions

**a.** Who are the stakeholders in this situation?

**b.** What are the ethical issues in this situation?

**c.** What would you do as a controller in this situation?

## Comprehensive Accounting Cycle Review

*Complete all steps in accounting cycle.* GLS

**ACR4.1** **Financial Statement** Mike Greenberg opened Kleene Window Washing Co. on July 1, 2020. During July, the following transactions were completed.

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July 1 Owner invested $12,000 cash in the company.
1 Purchased used truck for $8,000, paying $2,000 cash and the balance on account.
3 Purchased cleaning supplies for $900 on account.
5 Paid $1,800 cash on a 1-year insurance policy effective July 1.
12 Billed customers $3,700 for cleaning services performed.
18 Paid $1,000 cash on amount owed on truck and $500 on amount owed on cleaning supplies.
20 Paid $2,000 cash for employee salaries.
21 Collected $1,600 cash from customers billed on July 12.
25 Billed customers $2,500 for cleaning services performed.
31 Paid $290 for maintenance of the truck during month.
31 Owner withdrew $600 cash from the company.

The chart of accounts for Kleene Window Washing contains the following accounts: Cash, Accounts Receivable, Supplies, Prepaid Insurance, Equipment, Accumulated Depreciation—Equipment, Accounts Payable, Salaries and Wages Payable, Owner's Capital, Owner's Drawings, Income Summary, Service Revenue, Maintenance and Repairs Expense, Supplies Expense, Depreciation Expense, Insurance Expense, and Salaries and Wages Expense.

### Instructions

**a.** Journalize the July transactions.

**b.** Post to the ledger accounts. (Use T-accounts.)

**c.** Prepare a trial balance at July 31.

**d.** Journalize the following adjustments.

**1.** Services performed but unbilled and uncollected at July 31 were $1,700.

**2.** Depreciation on equipment for the month was $180.

**3.** One-twelfth of the insurance expired.

**4.** A count shows $320 of cleaning supplies on hand at July 31.

**5.** Accrued but unpaid employee salaries were $400.

**e.** Post adjusting entries to the T-accounts.

**f.** Prepare an adjusted trial balance.

f. Cash $5,410

**g.** Prepare the income statement and an owner's equity statement for July and a classified balance sheet at July 31.

g. Tot. assets $21,500

**h.** Journalize and post closing entries and complete the closing process.

**i.** Prepare a post-closing trial balance at July 31.

**ACR4.2** **Financial Statement** Lars Linken opened Lars Cleaners on March 1, 2020. During March, the following transactions were completed.

*Complete all steps in accounting cycle.*

GLS

Mar. 1 Owner invested $15,000 cash in the company.
1 Borrowed $6,000 cash by signing a 6-month, 6%, $6,000 note payable. Interest will be paid the first day of each subsequent month.
1 Purchased used truck for $8,000 cash.
2 Paid $1,500 cash to cover rent from March 1 through May 31.
3 Paid $2,400 cash on a 6-month insurance policy effective March 1.
6 Purchased cleaning supplies for $2,000 on account.
14 Billed customers $3,700 for cleaning services performed.
18 Paid $500 on amount owed on cleaning supplies.
20 Paid $1,750 cash for employee salaries.
21 Collected $1,600 cash from customers billed on March 14.
28 Billed customers $4,200 for cleaning services performed.
31 Paid $350 for gas and oil used in truck during month (use Maintenance and Repairs Expense).
31 Owner withdrew $900 cash from the company.

The chart of accounts for Lars Cleaners contains the following accounts: Cash, Accounts Receivable, Supplies, Prepaid Insurance, Prepaid Rent, Equipment, Accumulated Depreciation—Equipment, Accounts Payable, Salaries and Wages Payable, Notes Payable, Interest Payable, Owner's Capital, Owner's Drawings, Income Summary, Service Revenue, Maintenance and Repairs Expense, Supplies Expense, Depreciation Expense, Insurance Expense, Salaries and Wages Expense, Rent Expense, and Interest Expense.

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**Instructions**

**a.** Journalize the March transactions.

**b.** Post to the ledger accounts. (Use T-accounts.)

**c.** Prepare a trial balance at March 31.

**d.** Journalize the following adjustments.

**1.** Services performed but unbilled and uncollected at March 31 were $200.

**2.** Depreciation on equipment for the month was $250.

**3.** One-sixth of the insurance expired.

**4.** An inventory count shows $280 of cleaning supplies on hand at March 31.

**5.** Accrued but unpaid employee salaries were $1,080.

**6.** One month of the prepaid rent has expired.

**7.** One month of interest expense related to the note payable has accrued and will be paid April 1. (*Hint:* Use the formula from Illustration 3.17 to compute interest.)

**e.** Post adjusting entries to the T-accounts.

f. Tot. adj. trial balance $31,960

**f.** Prepare an adjusted trial balance.

g. Tot. assets $24,730

**g.** Prepare the income statement and an owner's equity statement for March and a classified balance sheet at March 31.

**h.** Journalize and post closing entries and complete the closing process.

**i.** Prepare a post-closing trial balance at March 31.

*Journalize transactions and follow through accounting cycle to preparation of financial statements.*

GLS

**ACR4.3** **Financial Statement** On August 1, 2020, the following were the account balances of B&B Repair Services.

| | Debit | | Credit |
|---|---|---|---|
| Cash | $ 6,040 | Accumulated Depreciation—Equipment | $ 600 |
| Accounts Receivable | 2,910 | Accounts Payable | 2,300 |
| Notes Receivable | 4,000 | Unearned Service Revenue | 1,260 |
| Supplies | 1,030 | Salaries and Wages Payable | 1,420 |
| Equipment | 10,000 | Owner's Capital | 18,400 |
| | $23,980 | | $23,980 |

During August, the following summary transactions were completed.

| | |
|---|---|
| Aug. 1 | Paid $400 cash for advertising in local newspapers. Advertising flyers will be included with newspapers delivered during August and September. |
| 3 | Paid August rent $380. |
| 5 | Received $1,200 cash from customers in payment on account. |
| 10 | Paid $3,120 for salaries due employees, of which $1,700 is for August and $1,420 is for July salaries payable. |
| 12 | Received $2,800 cash for services performed in August. |
| 15 | Purchased store equipment on account $2,000. |
| 20 | Paid creditors $2,000 of accounts payable due. |
| 22 | Purchased supplies on account $800. |
| 25 | Paid $2,900 cash for employees' salaries. |
| 27 | Billed customers $3,760 for services performed. |
| 29 | Received $780 from customers for services to be performed in the future. |

Adjustment data:

**1.** A count shows supplies on hand of $960.

**2.** Accrued but unpaid employees' salaries are $1,540.

**3.** Depreciation on equipment for the month is $320.

**4.** Services were performed to satisfy $800 of unearned service revenue.

**5.** One month's worth of advertising services has been received.

**6.** One month of interest revenue related to the $4,000 note receivable has accrued. The 4-month note has a 6% annual interest rate. (*Hint:* Use the formula from Illustration 3.17 to compute interest.)

**Instructions**

**a.** Enter the August 1 balances in the ledger accounts. (Use T-accounts.)

**b.** Journalize the August transactions.

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**c.** Post to the ledger accounts. B&B's chart of accounts includes Prepaid Advertising, Interest Receivable, Service Revenue, Interest Revenue, Advertising Expense, Depreciation Expense, Supplies Expense, Salaries and Wages Expense, and Rent Expense.

**d.** Prepare a trial balance at August 31.

**e.** Journalize and post adjusting entries.

**f.** Prepare an adjusted trial balance.

**g.** Prepare an income statement and an owner's equity statement for August and a classified balance sheet at August 31.

**h.** Journalize and post closing entries and complete the closing process.

**i.** Prepare a post-closing trial balance at August 31.

f. Cash $2,020
Tot. adj. trial balance $32,580

g. Net loss $530

**ACR4.4** **Financial Statement** At June 30, 2020, the end of its most recent fiscal year, Green River Computer Consultants' post-closing trial balance was as follows:

*Record and post transaction, adjusting, and closing journal entries; prepare adjusted trial balance and financial statements.*

| | Debit | Credit |
|---|---|---|
| Cash | $5,230 | |
| Accounts receivable | 1,200 | |
| Supplies | 690 | |
| Accounts payable | | $ 400 |
| Unearned service revenue | | 1,120 |
| Owner's capital | | 5,600 |
| | $7,120 | $7,120 |

The company underwent a major expansion in July. New staff was hired and more financing was obtained. Green River conducted the following transactions during July 2020, and adjusts its accounts monthly.

| | | |
|---|---|---|
| July | 1 | Purchased equipment, paying $4,000 cash and signing a 2-year note payable for $20,000. The equipment has a 4-year useful life. The note has a 6% interest rate which is payable on the first day of each following month. |
| | 2 | Owner invested $50,000 cash in the company. |
| | 3 | Paid $3,600 cash for a 12-month insurance policy effective July 1. |
| | 3 | Paid the first 2 (July and August 2020) months' rent for an annual lease of office space for $4,000 per month. |
| | 6 | Paid $3,800 for supplies. |
| | 9 | Visited client offices and agreed on the terms of a consulting project. Green River will bill the client, Connor Productions, on the 20th of each month for services performed. |
| | 10 | Collected $1,200 cash on account from Milani Brothers. This client was billed in June when Green River performed the service. |
| | 13 | Performed services for Fitzgerald Enterprises. This client paid $1,120 in advance last month. All services relating to this payment are now completed. |
| | 14 | Paid $400 cash for a utility bill. This related to June utilities that were accrued at the end of June. |
| | 16 | Met with a new client, Thunder Bay Technologies. Received $12,000 cash in advance for future services to be performed. |
| | 18 | Paid semi-monthly salaries for $11,000. |
| | 20 | Performed services worth $28,000 on account and billed customers. |
| | 20 | Received a bill for $2,200 for advertising services received during July. The amount is not due until August 15. |
| | 23 | Performed the first phase of the project for Thunder Bay Technologies. Recognized $10,000 of revenue from the cash advance received July 16. |
| | 27 | Received $15,000 cash from customers billed on July 20. |

Adjustment data:

1. Adjustment of prepaid insurance.
2. Adjustment of prepaid rent.
3. Supplies used, $1,250.
4. Equipment depreciation, $500 per month.
5. Accrual of interest on note payable. (*Hint:* Use the formula from Illustration 3.17 to compute interest.)
6. Salaries for the second half of July, $11,000, to be paid on August 1.

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7. Estimated utilities expense for July, $800 (invoice will be received in August).
8. Income tax for July, $1,200, will be paid in August. (*Hint:* Use the accounts Income Tax Expense and Income Taxes Payable.)

The chart of accounts for Green River Computer Consultants contains the following accounts: Cash, Accounts Receivable, Supplies, Prepaid Insurance. Prepaid Rent, Equipment, Accumulated Depreciation—Equipment, Accounts Payable, Notes Payable, Interest Payable, Income Taxes Payable, Salaries and Wages Payable, Unearned Service Revenue, Owner's Capital, Owner's Drawings, Income Summary, Service Revenue, Supplies Expense, Depreciation Expense, Insurance Expense, Salaries and Wages Expense, Advertising Expense, Income Tax Expense, Interest Expense, Rent Expense, and Utilities Expense.

**Instructions**

**a.** Enter the July 1 balances in the ledger accounts. (Use T-accounts.)

**b.** Journalize the July transactions.

**c.** Post to the ledger accounts.

**d.** Prepare a trial balance at July 31.

**e.** Journalize and post adjusting entries for the month ending July 31.

**f.** Prepare an adjusted trial balance.

g. Net income $6,770
Tot. assets $99,670

**g.** Prepare an income statement and an owner's equity statement for July and a classified balance sheet at July 31.

**h.** Journalize and post closing entries and complete the closing process.

**i.** Prepare a post-closing trial balance at July 31.

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT4.1** The financial statements of **Apple Inc.** are presented in Appendix A at the end of this textbook. The complete annual report, including the notes to the financial statements, is available at the company's website.

**Instructions**

Answer the questions below using Apple's Consolidated Balance Sheets.

**a.** What were Apple's total current assets at September 26, 2015, and September 27, 2014?

**b.** Are assets that Apple included under current assets listed in proper order? Explain.

**c.** How are Apple's assets classified?

**d.** What was Apple's "Cash and cash equivalents" at September 26, 2015?

**e.** What were Apple's total current liabilities at September 26, 2015, and September 27, 2014?

### Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT4.2** **PepsiCo, Inc.**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

**Instructions**

**a.** Based on the information contained in these financial statements, determine each of the following for PepsiCo at December 26, 2015, and for Coca-Cola at December 31, 2015.

1. Total current assets.
2. Net amount of property, plant, and equipment (land, buildings, and equipment).
3. Total current liabilities.
4. Total equity.

**b.** What conclusions concerning the companies' respective financial positions can be drawn?

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## Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT4.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

### Instructions

**a.** Based on the information contained in these financial statements, determine the following for Amazon at December 31, 2015, and Wal-Mart at January 31, 2016.

1. Total current assets.
2. Net amount of property and equipment (fixed assets), net.
3. Total current liabilities.
4. Total equity.

**b.** What conclusions concerning these two companies can be drawn from these data?

## Real-World Focus

**CT4.4** Most companies have established home pages on the Internet, but each might offer different types of information.

### Instructions

Examine the home pages of any two companies and then answer the following questions.

**a.** What type of information is available?

**b.** Is any accounting-related information presented?

**c.** Would you describe the home page as informative, promotional, or both? Why?

## Decision-Making Across the Organization

**CT4.5** Whitegloves Janitorial Service was started 2 years ago by Jenna Olson. Because business has been exceptionally good, Jenna decided on July 1, 2020, to expand operations by acquiring an additional truck and hiring two more assistants. To finance the expansion, Jenna obtained on July 1, 2020, a $25,000, 10% bank loan, payable $10,000 on July 1, 2021, and the balance on July 1, 2022. The terms of the loan require the borrower to have $10,000 more current assets than current liabilities at December 31, 2020. If these terms are not met, the bank loan will be refinanced at 15% interest. At December 31, 2020, the accountant for Whitegloves Janitorial Service prepared the balance sheet shown below.

**Whitegloves Janitorial Service**
**Balance Sheet**
**December 31, 2020**

| Assets | | Liabilities and Owner's Equity | |
|---|---|---|---|
| Current assets | | Current liabilities | |
| Cash | $ 6,500 | Notes payable | $10,000 |
| Accounts receivable | 9,000 | Accounts payable | 2,500 |
| Supplies | 5,200 | Total current liabilities | 12,500 |
| Prepaid insurance | 4,800 | Long-term liability | |
| Total current assets | 25,500 | Notes payable | 15,000 |
| Property, plant, and equipment | | Total liabilities | 27,500 |
| Equipment (net) | 22,000 | Owner's equity | |
| Delivery trucks (net) | 34,000 | Owner's capital | 54,000 |
| Total property, plant, and equipment | 56,000 | | |
| Total assets | $81,500 | Total liabilities and owner's equity | $81,500 |

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Jenna presented the balance sheet to the bank's loan officer on January 2, 2021, confident that the company had met the terms of the loan. The loan officer was not impressed. She said, "We need financial statements audited by a CPA." A CPA was hired and immediately realized that the balance sheet had been prepared from a trial balance and not from an adjusted trial balance. The adjustment data at the balance sheet date consisted of the following.

1. Unbilled janitorial services performed were $3,700.
2. Janitorial supplies on hand were $2,500.
3. Prepaid insurance was a 3-year policy dated January 1, 2020.
4. December expenses incurred but unpaid at December 31, $500.
5. Interest on the bank loan was not recorded.
6. The amounts for property, plant, and equipment presented in the balance sheet were reported net of accumulated depreciation (cost less accumulated depreciation). These amounts were $4,000 for cleaning equipment and $5,000 for delivery trucks as of January 1, 2020. Depreciation for 2020, still unrecorded, was $2,000 for cleaning equipment and $5,000 for delivery trucks.

### Instructions

With the class divided into groups, answer the following.

**a.** Prepare a correct balance sheet.

**b.** Were the terms of the bank loan met? Explain.

## Communication Activity

**CT4.6** The accounting cycle is important in understanding the accounting process.

### Instructions

Write a memo to your instructor that lists the steps of the accounting cycle in the order they should be completed. End with a paragraph that explains the optional steps in the cycle.

## All About You

**CT4.7** Companies prepare balance sheets in order to know their financial position at a specific point in time. This enables them to make a comparison to their position at previous points in time, and gives them a basis for planning for the future. In order to evaluate your financial position, you need to prepare a personal balance sheet. Assume that you have compiled the following information regarding your finances. (*Note:* Some of the items might not be used in your personal balance sheet.)

| | |
|---|---|
| Amount owed on student loan balance (long-term) | $ 5,000 |
| Balance in checking account | 1,200 |
| Certificate of deposit (6-month) | 3,000 |
| Annual earnings from part-time job | 11,300 |
| Automobile | 7,000 |
| Balance on automobile loan (current portion) | 1,500 |
| Balance on automobile loan (long-term portion) | 4,000 |
| Home computer | 800 |
| Amount owed to you by younger brother | 300 |
| Balance in money market account | 1,800 |
| Annual tuition | 6,400 |
| Video and stereo equipment | 1,250 |
| Balance owed on credit card (current portion) | 150 |
| Balance owed on credit card (long-term portion) | 1,650 |

### Instructions

Prepare a personal balance sheet using the format you have learned for a classified balance sheet for a company. For the capital account, use Owner's Capital.

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### FASB Codification Activity

**CT4.8** If your school has a subscription to the FASB Codification, log in and prepare responses to the following.

#### Instructions

**a.** Access the glossary ("Master Glossary") at the FASB Codification website to answer the following.

**1.** What is the definition of current assets?

**2.** What is the definition of current liabilities?

**b.** A company wants to offset its accounts payable against its cash account and show a cash amount net of accounts payable on its balance sheet. Identify the criteria (found in the FASB Codification) under which a company has the right of set off. Does the company have the right to offset accounts payable against the cash account?

## A Look at IFRS

**LEARNING OBJECTIVE 6**

Compare the procedures for the closing process under GAAP and IFRS.

The classified balance sheet, although generally required internationally, contains certain variations in format when reporting under IFRS.

### Key Points

Following are the key similarities and differences between GAAP and IFRS related to the closing process and the financial statements.

#### Similarities

- The procedures of the closing process are applicable to all companies, whether they are using IFRS or GAAP.
- IFRS generally requires a classified statement of financial position similar to the classified balance sheet under GAAP.
- IFRS follows the same guidelines as GAAP for distinguishing between current and non-current assets and liabilities.

#### Differences

- IFRS recommends but does not require the use of the title "statement of financial position" rather than balance sheet.
- The format of statement of financial position information is often presented differently under IFRS. Although no specific format is required, many companies that follow IFRS present statement of financial position information in this order:
  - ♦ Non-current assets
  - ♦ Current assets
  - ♦ Equity
  - ♦ Non-current liabilities
  - ♦ Current liabilities
- Under IFRS, current assets are usually listed in the reverse order of liquidity. For example, under GAAP cash is listed first, but under IFRS it is listed last.
- IFRS has many differences in terminology from what are shown in your textbook. For example, in the following sample statement of financial position, notice in the investment category that stock is called shares.

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**Franklin Company**
**Statement of Financial Position**
**October 31, 2020**

| | | | |
|---|---|---|---|
| **Assets** | | | |
| **Intangible assets** | | | |
| Patents | | | $ 3,100 |
| **Property, plant, and equipment** | | | |
| Land | | $10,000 | |
| Equipment | $24,000 | | |
| Less: Accumulated depreciation | 5,000 | 19,000 | 29,000 |
| **Long-term investments** | | | |
| Share investments | | 5,200 | |
| Investment in real estate | | 2,000 | 7,200 |
| **Current assets** | | | |
| Prepaid insurance | | 400 | |
| Supplies | | 2,100 | |
| Inventory | | 3,000 | |
| Notes receivable | | 1,000 | |
| Accounts receivable | | 7,000 | |
| Debt investments | | 2,000 | |
| Cash | | 6,600 | 22,100 |
| Total assets | | | $61,400 |
| **Equity and Liabilities** | | | |
| **Equity** | | | |
| Owner's capital | | | $34,050 |
| **Non-current liabilities** | | | |
| Mortgage payable | | $10,000 | |
| Notes payable | | 1,300 | 11,300 |
| **Current liabilities** | | | |
| Notes payable | | 11,000 | |
| Accounts payable | | 2,100 | |
| Salaries and wages payable | | 1,600 | |
| Unearned service revenue | | 900 | |
| Interest payable | | 450 | 16,050 |
| Total equity and liabilities | | | $61,400 |

- Both GAAP and IFRS are increasing the use of fair value to report assets. However, at this point IFRS has adopted it more broadly. As examples, under IFRS, companies can apply fair value to property, plant, and equipment, and in some cases intangible assets.

## Looking to the Future

The IASB and the FASB are working on a project to converge their standards related to financial statement presentation. A key feature of the proposed framework is that each of the statements will be organized in the same format, to separate an entity's financing activities from its operating and investing activities and, further, to separate financing activities into transactions with owners and creditors. Thus, the same classifications used in the statement of financial position would also be used in the income statement and the statement of cash flows. The project has three phases. You can follow the joint financial presentation project at the FASB website.

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## IFRS Practice

### IFRS Self-Test Questions

1. A company has purchased a tract of land and expects to build a production plant on the land in approximately 5 years. During the 5 years before construction, the land will be idle. Under IFRS, the land should be reported as:
   **a.** land expense.
   **b.** property, plant, and equipment.
   **c.** an intangible asset.
   **d.** a long-term investment.
2. Current assets under IFRS are listed generally:
   **a.** by importance.
   **b.** in the reverse order of their expected conversion to cash.
   **c.** by longevity.
   **d.** alphabetically.
3. Companies that use IFRS:
   **a.** may report all their assets on the statement of financial position at fair value.
   **b.** may offset assets against liabilities and show net assets and net liabilities on their statements of financial position, rather than the underlying detailed line items.
   **c.** may report non-current assets before current assets on the statement of financial position.
   **d.** do not have any guidelines as to what should be reported on the statement of financial position.
4. Companies that follow IFRS to prepare a statement of financial position generally use the following order of classification:
   **a.** current assets, current liabilities, non-current assets, non-current liabilities, equity.
   **b.** non-current assets, non-current liabilities, current assets, current liabilities, equity.
   **c.** non-current assets, current assets, equity, non-current liabilities, current liabilities.
   **d.** equity, non-current assets, current assets, non-current liabilities, current liabilities.

### IFRS Exercises

**IFRS4.1** In what ways does the format of a statement of financial of position under IFRS often differ from a balance sheet presented under GAAP?

**IFRS4.2** What term is commonly used under IFRS in reference to the balance sheet?

**IFRS4.3** The statement of financial position for Wallby Company includes the following accounts (in British pounds): Accounts Receivable £12,500, Prepaid Insurance £3,600, Cash £15,400, Supplies £5,200, and Debt Investments (short-term) £6,700. Prepare the current assets section of the statement of financial position, listing the accounts in proper sequence.

**IFRS4.4** The following information is available for Sutter Bowling Alley at December 31, 2020.

| | | | |
|---|---|---|---|
| Buildings | $128,800 | Owner's Capital | $115,000 |
| Accounts Receivable | 14,520 | Accumulated Depreciation—Buildings | 42,600 |
| Prepaid Insurance | 4,680 | Accounts Payable | 12,300 |
| Cash | 18,040 | Notes Payable | 97,780 |
| Equipment | 62,400 | Accumulated Depreciation—Equipment | 18,720 |
| Land | 64,000 | Interest Payable | 2,600 |
| Insurance Expense | 780 | Bowling Revenues | 14,180 |
| Depreciation Expense | 7,360 | | |
| Interest Expense | 2,600 | | |

Prepare a classified statement of financial position. Assume that $13,900 of the notes payable will be paid in 2021.

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## International Comparative Analysis Problem: Apple vs. Louis Vuitton

**IFRS4.5** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

### Instructions

Identify five differences in the format of the statement of financial position used by Louis Vuitton compared to a company, such as **Apple**, that follows GAAP. (Apple's financial statements are available in Appendix A.)

### Answers to IFRS Self-Test Questions

**1.** d **2.** b **3.** c **4.** c

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# Accounting for Merchandising Operations

## Chapter Preview

Merchandising is one of the largest and most influential industries in the United States. It is likely that a number of you will work for a merchandiser. Therefore, understanding the financial statements of merchandising companies is important. In this chapter, you will learn the basics about reporting merchandising transactions. In addition, you will learn how to prepare and analyze a commonly used form of the income statement—the multiple-step income statement.

## Feature Story

### Buy Now, Vote Later

Have you ever shopped for outdoor gear at an **REI (Recreational Equipment Incorporated)** store? If so, you might have been surprised if a salesclerk asked if you were a member. A member? What do you mean a member? REI is a consumer cooperative, or "co-op" for short. To figure out what that means, consider this quote from the company's annual stewardship report:

As a cooperative, the Company is owned by its members. Each member is entitled to one vote in the election of the Company's Board of Directors. Since January 1, 2008, the nonrefundable, nontransferable, one-time membership fee has been 20 dollars. As of December 31, 2010, there were approximately 10.8 million members.

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Voting rights? Now that's something you don't get from shopping at **Wal-Mart**. REI members get other benefits as well, including sharing in the company's profits through a dividend at the end of the year. The more you spend, the bigger your dividend.

Since REI is a co-op, you might also wonder whether management's incentives might be a little different than at other stores. Management is still concerned about making a profit as it ensures the long-term viability of the company. REI's members also want the company to be run efficiently, so that prices remain low. In order for its members to evaluate just how well management is doing, REI publishes an audited annual report, just like publicly traded companies do.

How well is this business model working for REI? Well, it has consistently been rated as one of the best places to work in the United States by *Fortune* magazine. It is one of only five companies named each year since the list was created in 1998. Also, REI had sustainable business practices long before social responsibility became popular at other companies. The CEO's stewardship report states "we reduced the absolute amount of energy we use despite opening four new stores and growing our business; we grew the amount of FSC-certified paper we use to 58.4 percent of our total paper footprint—including our cash register receipt paper; we facilitated 2.2 million volunteer hours and we provided $3.7 million to more than 330 conservation and recreation nonprofits."

So, while REI, like other retailers, closely monitors its financial results, it also strives to succeed in other areas. And, with over 10 million votes at stake, REI's management knows that it has to deliver.

# Chapter Outline

## LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Describe merchandising operations and inventory systems. | • Operating cycles<br>• Flow of costs | **DO IT! 1** Merchandising Operations and Inventory Systems |
| **LO 2** Record purchases under a perpetual inventory system. | • Freight costs<br>• Purchase returns and allowances<br>• Purchase discounts<br>• Summary of purchasing transactions | **DO IT! 2** Purchase Transactions |
| **LO 3** Record sales under a perpetual inventory system. | • Sales returns and allowances<br>• Sales discounts | **DO IT! 3** Sales Transactions |
| **LO 4** Apply the steps in the accounting cycle to a merchandising company. | • Adjusting entries<br>• Closing entries<br>• Summary of merchandising entries | **DO IT! 4** Closing Entries |
| **LO 5** Prepare a multiple-step income statement and a comprehensive income statement. | • Multiple-step income statement<br>• Single-step income statement<br>• Comprehensive income statement<br>• Classified balance sheet | **DO IT! 5** Multiple-Step Income Statement |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

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# Merchandising Operations and Inventory Systems

**LEARNING OBJECTIVE 1**

Describe merchandising operations and inventory systems.

**REI**, **Wal-Mart**, and **Amazon.com** are called merchandising companies because they buy and sell merchandise rather than perform services as their primary source of revenue. Merchandising companies that purchase and sell directly to consumers are called **retailers**. Merchandising companies that sell to retailers are known as **wholesalers**. For example, retailer **Walgreens** might buy goods from wholesaler **McKesson**. Retailer **Office Depot** might buy office supplies from wholesaler **United Stationers**. The primary source of revenue for merchandising companies is the sale of merchandise, often referred to simply as **sales revenue** or **sales**. A merchandising company has two categories of expenses: cost of goods sold and operating expenses.

**Cost of goods sold** is the total cost of merchandise sold during the period. This expense is directly related to the revenue recognized from the sale of goods. **Illustration 5.1** shows the income measurement process for a merchandising company. The items in the two blue boxes are unique to a merchandising company; they are not used by a service company.

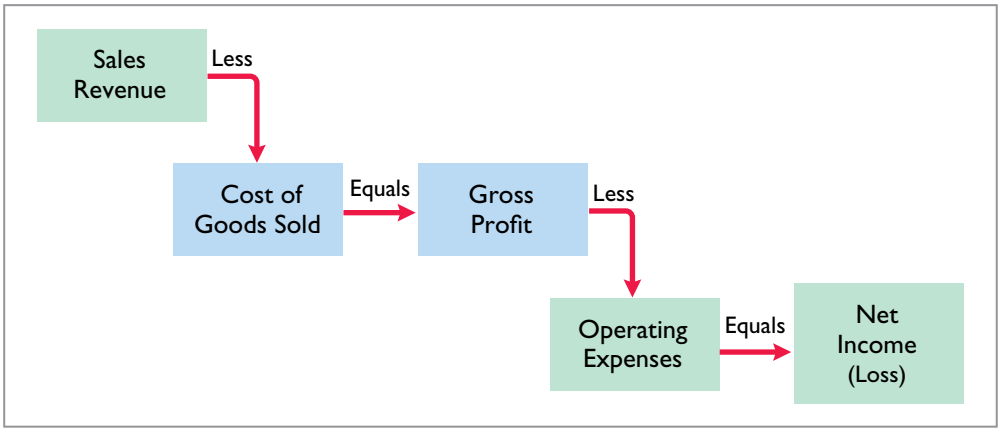


**ILLUSTRATION 5.1**
**Income measurement process for a merchandising company**

## Operating Cycles

The operating cycle of a merchandising company ordinarily is longer than that of a service company. The purchase of merchandise inventory and its eventual sale lengthen the cycle. **Illustration 5.2** shows the operating cycle of a service company.

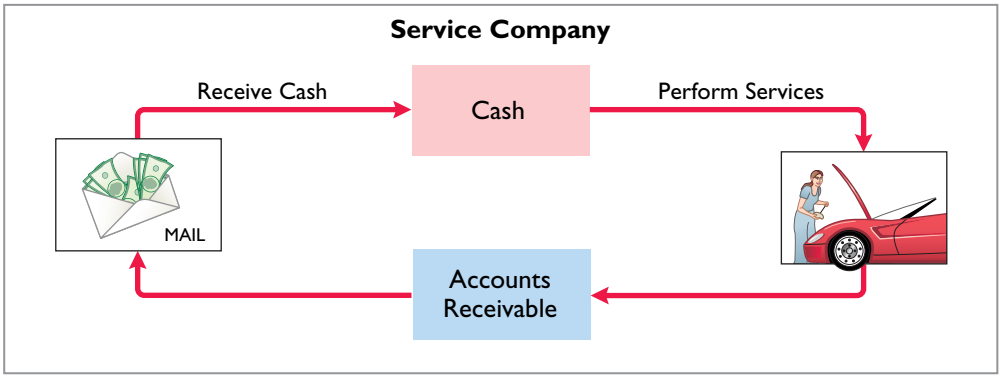


**ILLUSTRATION 5.2**
**Operating cycle for a service company**

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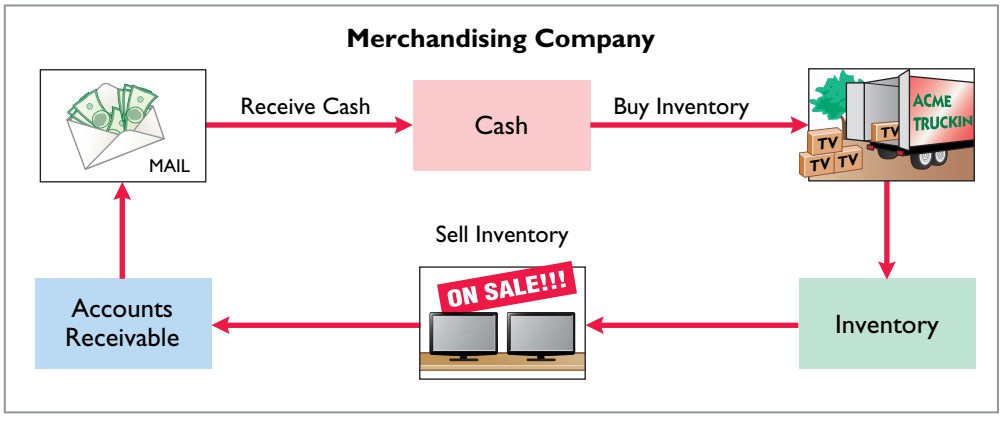
Illustration 5.3 shows the operating cycle of a merchandising company.

**ILLUSTRATION 5.3**
**Operating cycle for a merchandising company**

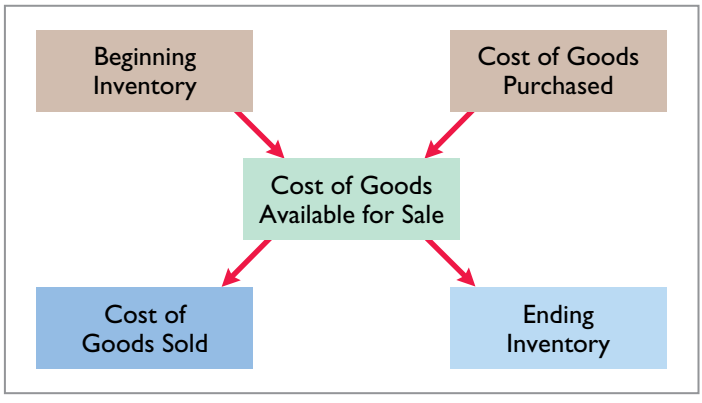



Note that the added asset account for a merchandising company is the Inventory account. Companies report inventory as a current asset on the balance sheet.

## Flow of Costs

The flow of costs for a merchandising company is as follows. Beginning inventory plus the cost of goods purchased is the cost of goods available for sale. As goods are sold, they are assigned to cost of goods sold. Those goods that are not sold by the end of the accounting period represent ending inventory. Illustration 5.4 describes these relationships. Companies use one of two systems to account for inventory: a **perpetual inventory system** or a **periodic inventory system**.

**ILLUSTRATION 5.4**
**Flow of costs**




### Perpetual System

**HELPFUL HINT**
Even under perpetual inventory systems, companies take a physical inventory count. This is done as a control procedure to verify inventory levels, in order to detect theft or "shrinkage."

In a **perpetual inventory system**, companies keep detailed records of the cost of each inventory purchase and sale (see Helpful Hint). These records continuously—perpetually—show the inventory that should be on hand for every item. For example, a **Ford** dealership has separate inventory records for each automobile, truck, and van on its lot and showroom floor. Similarly, a **Kroger** grocery store uses bar codes and optical scanners to keep a daily running record of every box of cereal and every jar of jelly that it buys and sells. Under a perpetual inventory system, a company determines the cost of goods sold **each time a sale occurs**.

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## Periodic System

In a **periodic inventory system**, companies do not keep detailed inventory records of the goods on hand throughout the period. Instead, they determine the cost of goods sold **only at the end of the accounting period**—that is, periodically. At that point, the company takes a physical inventory count to determine the cost of goods on hand.

To determine the cost of goods sold under a periodic inventory system, the following steps are necessary:

1. Determine the cost of goods on hand at the beginning of the accounting period.
2. Add to it the cost of goods purchased.
3. Subtract the cost of goods on hand as determined by the physical inventory count at the end of the accounting period.

**Illustration 5.5** compares the sequence of activities and the timing of the cost of goods sold computation under the two inventory systems.

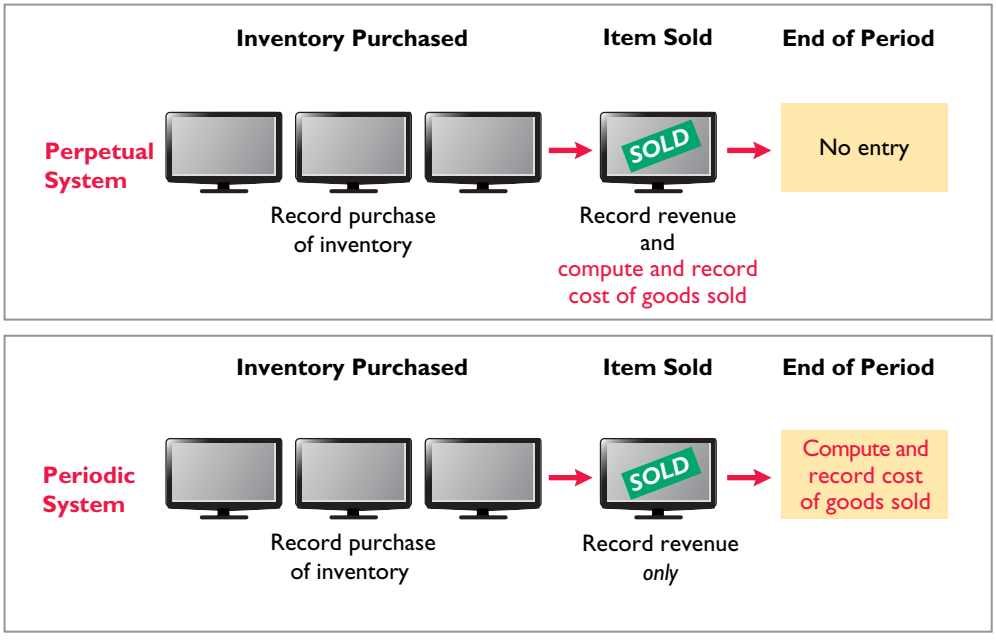


**ILLUSTRATION 5.5**
**Comparing perpetual and periodic inventory systems**

## Advantages of the Perpetual System

Companies that sell merchandise with high unit values, such as automobiles, furniture, and major home appliances, have traditionally used perpetual systems. The growing use of computers and electronic scanners has enabled many more companies to install perpetual inventory systems. The perpetual inventory system is so named because the accounting records continuously—perpetually—show the quantity and cost of the inventory that should be on hand at any time.

A perpetual inventory system provides better control over inventories than a periodic system. Since the inventory records show the quantities that should be on hand, the company can count the goods at any time to see whether the amount of goods actually on hand agrees with the inventory records. If shortages are uncovered, the company can investigate immediately. Although a perpetual inventory system requires both additional clerical work and expense to maintain the subsidiary records, a computerized system can minimize this cost. Much of **Amazon.com**'s success is attributed to its sophisticated inventory system.

Some businesses find it either unnecessary or uneconomical to invest in a sophisticated, computerized perpetual inventory system such as Amazon's. Many small merchandising businesses now use basic accounting software which provides some of the essential benefits of a

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perpetual inventory system. Also, managers of some small businesses still find that they can control their merchandise and manage day-to-day operations using a periodic inventory system.

**Because of the widespread use of the perpetual inventory system, we illustrate it in this chapter.** We discuss and illustrate the periodic system in Appendix 5B.

## Investor Insight Morrow Snowboards, Inc.

© Ben Blankenburg/iStockphoto

### Improving Stock Appeal

Investors are often eager to invest in a company that has a hot new product. However, when snowboard-maker **Morrow Snowboards, Inc.** issued shares of stock to the public for the first time, some investors expressed reluctance to invest in Morrow because of a number of accounting control problems. To reduce investor concerns, Morrow implemented a perpetual inventory system to improve its control over inventory. In addition, the company stated that it would perform a physical inventory count every quarter until it felt that its perpetual inventory system was reliable.

**If a perpetual system keeps track of inventory on a daily basis, why do companies ever need to do a physical count? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 1 | Merchandising Operations and Inventory Systems

Indicate whether the following statements are true or false. If false, indicate how to correct the statement.

1. The primary source of revenue for a merchandising company results from performing services for customers.
2. The operating cycle of a service company is usually shorter than that of a merchandising company.
3. Sales revenue less cost of goods sold equals gross profit.
4. Ending inventory plus the cost of goods purchased equals cost of goods available for sale.

**ACTION PLAN**

- Review merchandising concepts.
- Understand the flow of costs in a merchandising company.

### Solution

**1.** False. The primary source of revenue for a service company results from performing services for customers. **2.** True. **3.** True. **4.** False. Beginning inventory plus the cost of goods purchased equals cost of goods available for sale.

Related exercise material: **BE5.1, BE5.2, DO IT! 5.1, and E5.1.**

# Recording Purchases under a Perpetual System

**LEARNING OBJECTIVE 2**

Record purchases under a perpetual inventory system.

Companies purchase inventory using cash or credit (on account). They normally record purchases when they receive the goods from the seller. Every purchase should be supported by

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business documents that provide written evidence of the transaction. Each cash purchase should be supported by a canceled check or a cash register receipt indicating the items purchased and amounts paid. Companies record cash purchases by an increase in Inventory and a decrease in Cash.

A **purchase invoice** should support each credit purchase. This invoice indicates the total purchase price and other relevant information. However, the purchaser does not prepare a separate purchase invoice. Instead, the purchaser uses as a purchase invoice a copy of the sales invoice sent by the seller. In **Illustration 5.6**, for example, Sauk Stereo (the buyer) uses as a purchase invoice the sales invoice prepared by PW Audio Supply (the seller) (see **Helpful Hint**).

**ILLUSTRATION 5.6**
**Sales invoice used as purchase invoice by Sauk Stereo**

INVOICE NO. 731

**PW AUDIO SUPPLY**
27 CIRCLE DRIVE
HARDING, MICHIGAN 48281

SOLD TO
Firm Name: Sauk Stereo
Attention of: James Hoover, Purchasing Agent
Address: 125 Main Street
Chelsea (City) Illinois (State) 60915 (Zip)

| Date 5/4/20 | Salesperson Malone | Terms 2/10, n/30 | FOB Shipping Point | |
|---|---|---|---|---|
| Catalog No. | Description | Quantity | Price | Amount |
| X572Y9820 | Printed Circuit Board-prototype | 1 | 2,300 | $2,300 |
| A2547Z45 | Production Model Circuits | 5 | 300 | 1,500 |
| | | | TOTAL | $3,800 |

**IMPORTANT:** ALL RETURNS MUST BE MADE WITHIN 10 DAYS

**HELPFUL HINT**
To better understand the contents of this invoice, identify these items:
1. Seller
2. Invoice date
3. Purchaser
4. Salesperson
5. Credit terms
6. Freight terms
7. Goods sold: catalog number, description, quantity, price per unit
8. Total invoice amount

Sauk Stereo makes the following journal entry to record its purchase from PW Audio Supply on account. The entry increases (debits) Inventory and increases (credits) Accounts Payable.

| | | | |
|---|---|---|---|
| May 4 | Inventory | 3,800 | |
| | Accounts Payable | | 3,800 |
| | (To record goods purchased on account from PW Audio Supply) | | |

A = L + OE
+3,800
+3,800

**Cash Flows**
no effect

Under the perpetual inventory system, companies record purchases of merchandise for sale in the Inventory account. Thus, **REI** would increase (debit) Inventory for clothing, sporting goods, and anything else purchased for resale to customers.

Not all purchases are debited to Inventory, however. Companies record purchases of assets acquired for use and not for resale, such as supplies, equipment, and similar items, as increases to specific asset accounts rather than to Inventory. For example, to record the purchase

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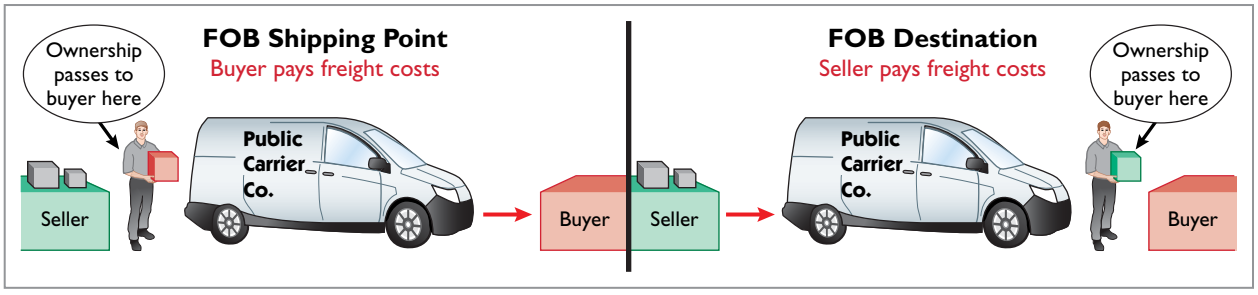
of materials used to make shelf signs or for cash register receipt paper, REI would increase (debit) Supplies.

## Freight Costs

The sales agreement should indicate who—the seller or the buyer—is to pay for transporting the goods to the buyer's place of business. When a common carrier such as a railroad, trucking company, or airline transports the goods, the carrier prepares a freight bill in accord with the sales agreement.

Freight terms are expressed as either FOB shipping point or FOB destination. The letters FOB mean **free on board**. Thus, **FOB shipping point** means that the seller places the goods free on board the carrier, and the buyer pays the freight costs. Conversely, **FOB destination** means that the seller places the goods free on board to the buyer's place of business, and the seller pays the freight. For example, the sales invoice in Illustration 5.6 indicates FOB shipping point. Thus, the buyer (Sauk Stereo) pays the freight charges. **Illustration 5.7** illustrates these shipping terms.

**ILLUSTRATION 5.7** **Shipping terms**




### Freight Costs Incurred by the Buyer

When the buyer incurs the transportation costs, these costs are considered part of the cost of purchasing inventory. Therefore, the buyer debits (increases) the Inventory account. For example, if Sauk Stereo (the buyer) pays Public Carrier Co. $150 for freight charges on May 6, the entry on Sauk Stereo's books is:

| A | = | L | + | OE |
|---|---|---|---|---|
| +150 | | | | |
| –150 | | | | |

**Cash Flows** –150

| | | | |
|---|---|---|---|
| May 6 | Inventory | 150 | |
| | Cash | | 150 |
| | (To record payment of freight on goods purchased) | | |

Thus, any freight costs incurred by the buyer are part of the cost of merchandise purchased. The reason: Inventory cost should include all costs to acquire the inventory, including freight necessary to deliver the goods to the buyer. Companies recognize these costs as cost of goods sold when inventory is sold.

### Freight Costs Incurred by the Seller

In contrast, **freight costs incurred by the seller on outgoing merchandise are an operating expense to the seller**. These costs increase an expense account titled Freight-Out (sometimes called Delivery Expense). For example, if the freight terms on the invoice in Illustration 5.6 had required PW Audio Supply (the seller) to pay the freight charges, the entry by PW Audio Supply would be:

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | –150 Exp |
| –150 | | | | |

**Cash Flows** –150

| | | | |
|---|---|---|---|
| May 4 | Freight-Out (or Delivery Expense) | 150 | |
| | Cash | | 150 |
| | (To record payment of freight on goods sold) | | |

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When the seller pays the freight charges, the seller will usually establish a higher invoice price for the goods to cover the shipping expense.

## Purchase Returns and Allowances

A purchaser may be dissatisfied with the merchandise received because the goods are damaged or defective, of inferior quality, or do not meet the purchaser's specifications. In such cases, the purchaser may return the goods to the seller for credit if the sale was made on credit, or for a cash refund if the purchase was for cash. This transaction is known as a **purchase return**. Alternatively, the purchaser may choose to keep the merchandise if the seller is willing to grant an allowance (deduction) from the purchase price. This transaction is known as a **purchase allowance**.

Assume that Sauk Stereo returned goods costing $300 to PW Audio Supply on May 8. The following entry by Sauk Stereo for the returned merchandise decreases (debits) Accounts Payable and decreases (credits) Inventory.

| | | | |
|---|---|---|---|
| May 8 | Accounts Payable | 300 | |
| | Inventory | | 300 |
| | (To record return of goods purchased from PW Audio Supply) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | –300 | | |
| –300 | | | | |

**Cash Flows**
no effect

Because Sauk Stereo increased Inventory when the goods were received, Inventory is decreased when Sauk Stereo returns the goods.

Suppose instead that Sauk Stereo chose to keep the goods after being granted a $50 allowance (reduction in price). It would reduce (debit) Accounts Payable and reduce (credit) Inventory for $50.

## Purchase Discounts

The credit terms of a purchase on account may permit the buyer to claim a cash discount for prompt payment. The buyer calls this cash discount a **purchase discount**. This incentive offers advantages to both parties. The purchaser saves money, and the seller is able to shorten the operating cycle by converting the accounts receivable into cash.

**Credit terms** specify the amount of the cash discount and time period in which it is offered. They also indicate the time period in which the purchaser is expected to pay the full invoice price. In the sales invoice in Illustration 5.6, credit terms are 2/10, n/30, which is read "two-ten, net thirty" (see **Helpful Hint**). This means that the buyer may take a 2% cash discount on the invoice price, less ("net of") any returns or allowances, if payment is made within 10 days of the invoice date (the **discount period**). Otherwise, the invoice price, less any returns or allowances, is due 30 days from the invoice date.

**HELPFUL HINT**
**The term *net* in "net 30" means the remaining amount due after subtracting any sales returns and allowances and partial payments.**

Alternatively, the discount period may extend to a specified number of days following the month in which the sale occurs. For example, 1/10 EOM (end of month) means that a 1% discount is available if the invoice is paid within the first 10 days of the next month.

When the seller elects not to offer a cash discount for prompt payment, credit terms will specify only the maximum time period for paying the balance due. For example, the invoice may state the time period as n/30, n/60, or n/10 EOM. This means, respectively, that the buyer must pay the net amount in 30 days, 60 days, or within the first 10 days of the next month.

When the buyer pays an invoice within the discount period, the amount of the discount decreases Inventory. Why? Because companies record inventory at cost and, by paying within the discount period, the buyer has reduced its cost. To illustrate, assume Sauk Stereo pays the balance due of $3,500 (gross invoice price of $3,800 less purchase returns and allowances of $300) on May 14, the last day of the discount period. Since the terms are 2/10, n/30, the cash discount is $70 ($3,500 × 2%), and Sauk Stereo pays $3,430 ($3,500 − $70). The entry Sauk Stereo makes to record its May 14 payment decreases (debits) Accounts Payable by

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the amount of the gross invoice price, reduces (credits) Inventory by the $70 discount, and reduces (credits) Cash by the net amount owed.

| | | | |
|---|---|---|---|
| May 14 | Accounts Payable | 3,500 | |
| | Cash | | 3,430 |
| | Inventory | | 70 |
| | (To record payment within discount period) | | |

A = L + OE
–3,500
–3,430
–70
Cash Flows
–3,430

If Sauk Stereo failed to take the discount and instead made full payment of $3,500 on June 3, it would debit Accounts Payable and credit Cash for $3,500 each.

| | | | |
|---|---|---|---|
| June 3 | Accounts Payable | 3,500 | |
| | Cash | | 3,500 |
| | (To record payment with no discount taken) | | |

A = L + OE
–3500
–3,500
Cash Flows
–3,500

A merchandising company usually should take all available discounts. Passing up the discount may be viewed as **paying interest** for use of the money. For example, passing up the discount offered by PW Audio Supply would be comparable to Sauk Stereo paying an interest rate of 2% for the use of $3,500 for 20 days. This is the equivalent of an annual interest rate of approximately 36.5% (2% × 365/20). Obviously, it would be better for Sauk Stereo to borrow at prevailing bank interest rates of 6% to 10% than to lose the discount.

## Summary of Purchasing Transactions

The following T-account (with transaction descriptions in red) provides a summary of the effect of the previous transactions on Inventory. Sauk Stereo originally purchased $3,800 worth of inventory on account for resale. It then returned $300 of goods. It paid $150 in freight charges, and finally, it received a $70 discount off the balance owed because it paid within the discount period. This results in a balance in Inventory of $3,580.

**Inventory**

| | | | | |
|---|---|---|---|---|
| **Purchase** | May 4 | 3,800 | May 8 300 | **Purchase return** |
| **Freight-in** | 6 | 150 | 14 70 | **Purchase discount** |
| **Balance** | | 3,580 | | |

### DO IT! 2 | Purchase Transactions

On September 5, De La Hoya Company buys merchandise on account from Junot Diaz Company. The purchase price of the goods paid by De La Hoya is $1,500, and the cost to Diaz Company was $800. On September 8, De La Hoya returns defective goods with a selling price of $200. Record the transactions on the books of De La Hoya Company.

**ACTION PLAN**

- Purchaser records goods at cost.
- When goods are returned, purchaser reduces Inventory.

**Solution**

| | | | |
|---|---|---|---|
| Sept. 5 | Inventory | 1,500 | |
| | Accounts Payable | | 1,500 |
| | (To record goods purchased on account) | | |
| 8 | Accounts Payable | 200 | |
| | Inventory | | 200 |
| | (To record return of defective goods) | | |

Related exercise material: **BE5.3, BE5.5, DO IT! 5.2, E5.2, E5.3, and E5.4.**

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# Recording Sales Under a Perpetual System

**LEARNING OBJECTIVE 3**

Record sales under a perpetual inventory system.

In accordance with the revenue recognition principle, companies record sales revenue when the performance obligation is satisfied. Typically, the performance obligation is satisfied when the goods transfer from the seller to the buyer. At this point, the sales transaction is complete and the sales price established.

Sales may be made on credit or for cash. A **business document** should support every sales transaction, to provide written evidence of the sale. **Cash register documents** provide evidence of cash sales. A **sales invoice**, like the one shown in Illustration 5.6, provides support for a credit sale. The original copy of the invoice goes to the customer, and the seller keeps a copy for use in recording the sale. The invoice shows the date of sale, customer name, total sales price, and other relevant information.

The seller makes two entries for each sale. **The first entry records the sale**: The seller increases (debits) Cash (or Accounts Receivable if a credit sale) and also increases (credits) Sales Revenue. **The second entry records the cost of the merchandise sold**: The seller increases (debits) Cost of Goods Sold and also decreases (credits) Inventory for the cost of those goods. As a result, the Inventory account will show at all times the amount of inventory that should be on hand.

To illustrate a credit sales transaction, PW Audio Supply records its May 4 sale of $3,800 to Sauk Stereo (see Illustration 5.6) as follows (assume the merchandise cost PW Audio Supply $2,400).

| | | | |
|---|---|---|---|
| May 4 | Accounts Receivable | 3,800 | |
| | Sales Revenue | | 3,800 |
| | (To record credit sale to Sauk Stereo per invoice #731) | | |

A = L + OE
+3,800
+3,800 Rev
**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| 4 | Cost of Goods Sold | 2,400 | |
| | Inventory | | 2,400 |
| | (To record cost of merchandise sold on invoice #731 to Sauk Stereo) | | |

A = L + OE
–2,400 Exp
–2,400
**Cash Flows**
no effect

For internal decision-making purposes, merchandising companies may use more than one sales account. For example, PW Audio Supply may decide to keep separate sales accounts for its sales of TVs, Blu-ray players, and headsets. **REI** might use separate accounts for camping gear, children's clothing, and ski equipment—or it might have even more narrowly defined accounts. By using separate sales accounts for major product lines, rather than a single combined sales account, company management can more closely monitor sales trends and respond to changes in sales patterns more strategically. For example, if TV sales are increasing while Blu-ray player sales are decreasing, PW Audio Supply might reevaluate both its advertising and pricing policies on these items to ensure they are optimal.

On its income statement presented to outside investors, a merchandising company normally would provide only a single sales figure—the sum of all of its individual sales accounts. This is done for two reasons. First, providing detail on all of its individual sales accounts would add considerable length to its income statement. Second, companies do not want their competitors to know the details of their operating results. However, **Microsoft** recently expanded its disclosure of revenue from three to five types. The reason: The additional categories enabled financial statement users to better evaluate the growth of the company's consumer and Internet businesses (see **Ethics Note**).

**ETHICS NOTE**

**Many companies are trying to improve the quality of their financial reporting. For example, General Electric now provides more detail on its revenues and operating profits.**

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## Anatomy of a Fraud[1]

Holly Harmon was a cashier at a national superstore for only a short time when she began stealing merchandise using three methods. Under the first method, her husband or friends took UPC labels from cheaper items and put them on more expensive items. Holly then scanned the goods at the register. Using the second method, Holly scanned an item at the register but then voided the sale and left the merchandise in the shopping cart. A third approach was to put goods into large plastic containers. She scanned the plastic containers but not the goods within them. After Holly quit, a review of past surveillance tapes enabled the store to observe the thefts and to identify the participants.

### Total take: $12,000

### The Missing Controls

**Human resource controls.** A background check would have revealed Holly's previous criminal record. She would not have been hired as a cashier.

**Physical controls.** Software can flag high numbers of voided transactions or a high number of sales of low-priced goods. Random comparisons of video records with cash register records can ensure that the goods reported as sold on the register are the same goods that are shown being purchased on the video recording. Finally, employees should be aware that they are being monitored.

Source: Adapted from Wells, *Fraud Casebook* (2007), pp. 251–259.

*At the end of "Anatomy of a Fraud" stories, which describe some recent real-world frauds, we discuss the missing control activities that would likely have prevented or uncovered the fraud.*

# Sales Returns and Allowances

We now look at the "flip side" of purchase returns and allowances, which the seller records as **sales returns and allowances**. These are transactions where the seller either accepts goods back from the buyer (a return) or grants a reduction in the purchase price (an allowance) so the buyer will keep the goods. PW Audio Supply's entries to record credit for returned goods involve (1) an increase (debit) in Sales Returns and Allowances (a contra account to Sales Revenue) and a decrease (credit) in Accounts Receivable at the $300 selling price, and (2) an increase (debit) in Inventory (assume a $140 cost) and a decrease (credit) in Cost of Goods Sold, as shown below (assuming that the goods were not defective).

A = L + OE
–300 Rev
–300
**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| May 8 | Sales Returns and Allowances | 300 | |
| | Accounts Receivable | | 300 |
| | (To record credit granted to Sauk Stereo for returned goods) | | |

A = L + OE
+140
+140 Exp
**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| 8 | Inventory | 140 | |
| | Cost of Goods Sold | | 140 |
| | (To record cost of goods returned) | | |

If Sauk Stereo returns goods because they are damaged or defective, then PW Audio Supply's entry to Inventory and Cost of Goods Sold should be for the fair value of the returned goods, rather than their cost. For example, if the returned goods were defective and had a fair value of $50, PW Audio Supply would debit Inventory for $50 and credit Cost of Goods Sold for $50.

[1]The "Anatomy of a Fraud" stories in this textbook are adapted from *Fraud Casebook: Lessons from the Bad Side of Business,* edited by Joseph T. Wells (Hoboken, NJ: John Wiley & Sons, Inc., 2007). Used by permission. The names of some of the people and organizations in the stories are fictitious, but the facts in the stories are true.

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What happens if the goods are not returned but the seller grants the buyer an allowance by reducing the purchase price? In this case, the seller debits Sales Returns and Allowances and credits Accounts Receivable for the amount of the allowance. An allowance has no impact on Inventory or Cost of Goods Sold.

Sales Returns and Allowances is a **contra revenue account** to Sales Revenue. This means that it is offset against a revenue account on the income statement. The normal balance of Sales Returns and Allowances is a debit. Companies use a contra account, instead of debiting Sales Revenue, to disclose in the accounts and in the income statement the amount of sales returns and allowances. Disclosure of this information is important to management. Excessive returns and allowances may suggest problems—inferior merchandise, inefficiencies in filling orders, errors in billing customers, or delivery or shipment mistakes. Moreover, a decrease (debit) recorded directly to Sales Revenue would obscure the relative importance of sales returns and allowances as a percentage of sales. It also could distort comparisons between total sales in different accounting periods.

At the end of the accounting period, if the company anticipates that sales returns and allowances will be material, the company should make an adjusting entry to estimate the amount of returns. In some industries, such as those relating to the sale of books and periodicals, returns are often material. The accounting for situations where returns must be estimated is addressed in advanced accounting courses.

### Accounting Across the Organization — Costco Wholesale Corp.

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#### The Point of No Returns?

In most industries, sales returns are relatively minor. But returns of consumer electronics can really take a bite out of profits. Recently, the marketing executives at **Costco Wholesale Corp.** faced a difficult decision. Costco has always prided itself on its generous return policy. Most goods have had an unlimited grace period for returns. However, a new policy requires that certain electronics must be returned within 90 days of their purchase. The reason? The cost of returned products such as high-definition TVs, computers, and iPods cut an estimated 8¢ per share off Costco's earnings per share, which was $2.30.

**Source:** Kris Hudson, "Costco Tightens Policy on Returning Electronics," *Wall Street Journal* (February 27, 2007), p. B4.

**If a company expects significant returns, what are the implications for revenue recognition? (Go to WileyPLUS for this answer and additional questions.)**

## Sales Discounts

As mentioned in our discussion of purchase transactions, the seller may offer the customer a cash discount—called by the seller a **sales discount**—for the prompt payment of the balance due. Like a purchase discount, a sales discount is based on the invoice price less returns and allowances, if any. The seller increases (debits) the Sales Discounts account for discounts that are taken. For example, PW Audio Supply makes the following entry to record the cash receipt on May 14 from Sauk Stereo within the discount period.

| | | | |
|---|---|---|---|
| May 14 | Cash | 3,430 | |
| | Sales Discounts | 70 | |
| | Accounts Receivable | | 3,500 |
| | (To record collection within 2/10, n/30 discount period from Sauk Stereo) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +3,430 | | | | |
| | | | | –70 Rev |
| –3,500 | | | | |

**Cash Flows**
+3,430

Like Sales Returns and Allowances, Sales Discounts is a **contra revenue account** to Sales Revenue. Its normal balance is a debit. PW Audio Supply uses this account, instead of debiting Sales Revenue, to disclose the amount of cash discounts taken by customers. If Sauk

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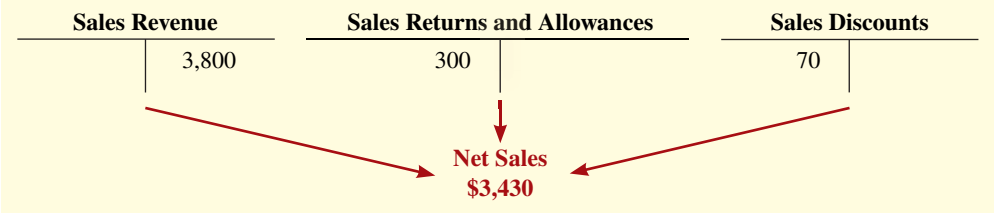
Stereo does not take the discount, PW Audio Supply increases (debits) Cash for $3,500 and decreases (credits) Accounts Receivable for the same amount at the date of collection.

At the end of the accounting period, if the amount of potential discounts is material, the company should make an adjusting entry to estimate the discounts. This would not usually be the case for sales discounts but might be necessary for other types of discounts such as volume discounts, which are addressed in more advanced accounting courses.

The following T-accounts summarize the three sales-related transactions and show their combined effect on net sales.




## People, Planet, and Profit Insight PepsiCo

Helen Sessions/Alamy

### Selling Green

Here is a question an executive of **PepsiCo** was asked: Should PepsiCo market green? The executive indicated that the company should, as he believes it's the No. 1 thing consumers all over the world care about. Here are some of his thoughts on this issue:

"Sun Chips are part of the food business I run. It's a 'healthy snack.' We decided that Sun Chips, if it's a healthy snack, should be made in facilities that have a net-zero footprint. In other words, I want off the electric grid everywhere we make Sun Chips. We did that. Sun Chips should be made in a facility that puts back more water than it uses. It does that. And we partnered with our suppliers and came out with the world's first compostable chip package.

Now, there was an issue with this package: It was louder than the New York subway, louder than jet engines taking off. What would a company that's committed to green do: walk away or stay committed? If your people are passionate, they're going to fix it for you as long as you stay committed. Six months later, the compostable bag has half the noise of our current package.

So the view today is: we should market green, we should be proud to do it . . . it has to be a 360-degree process, both internal and external. And if you do that, you can monetize environmental sustainability for the shareholders."

**Source:** "Four Problems—and Solutions," *Wall Street Journal* (March 7, 2011), p. R2.

**What is meant by "monetize environmental sustainability" for shareholders? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 3 | Sales Transactions

On September 5, De La Hoya Company buys merchandise on account from Junot Diaz Company. The selling price of the goods is $1,500, and the cost to Diaz Company was $800. On September 8, De La Hoya returns defective goods with a selling price of $200 and a fair value of $30. Record the transactions on the books of Junot Diaz Company.

### Solution

| | | | | |
|---|---|---|---|---|
| Sept. 5 | Accounts Receivable | | 1,500 | |
| | Sales Revenue | | | 1,500 |
| | (To record credit sale) | | | |
| 5 | Cost of Goods Sold | | 800 | |
| | Inventory | | | 800 |
| | (To record cost of goods sold on account) | | | |

**ACTION PLAN**

- **Seller records both the sale and the cost of goods sold at the time of the sale.**
- **When goods are returned, the seller records the return in a contra account, Sales Returns and Allowances, and reduces Accounts Receivable.**

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| | | | | |
|---|---|---|---|---|
| 8 | Sales Returns and Allowances | | 200 | |
| | Accounts Receivable | | | 200 |
| | (To record credit granted for receipt of returned goods) | | | |
| 8 | Inventory | | 30 | |
| | Cost of Goods Sold | | | 30 |
| | (To record fair value of goods returned) | | | |

Related exercise material: **BE5.3, BE5.4, DO IT! 5.3, E5.3, E5.4, and E5.5.**

**ACTION PLAN (*cont.*)**

- **Any goods returned increase Inventory and reduce Cost of Goods Sold. Defective or damaged inventory is recorded at fair value (scrap value).**

# The Accounting Cycle for a Merchandising Company

**LEARNING OBJECTIVE 4**

Apply the steps in the accounting cycle to a merchandising company.

Up to this point, we have illustrated the basic entries for transactions relating to purchases and sales in a perpetual inventory system. Now we consider the remaining steps in the accounting cycle for a merchandising company. Each of the required steps described in Chapter 4 for service companies apply to merchandising companies. Appendix 5A to this chapter shows use of a worksheet by a merchandiser (an optional step).

## Adjusting Entries

A merchandising company generally has the same types of adjusting entries as a service company. However, a merchandiser using a perpetual system will require one additional adjustment to make the records agree with the actual inventory on hand. Here's why. At the end of each period, for control purposes, a merchandising company that uses a perpetual system will take a physical count of its goods on hand. The company's unadjusted balance in Inventory usually does not agree with the actual amount of inventory on hand. The perpetual inventory records may be incorrect due to recording errors, theft, or waste. Thus, the company needs to adjust the perpetual records to make the recorded inventory amount agree with the inventory on hand. **This involves adjusting Inventory and Cost of Goods Sold.**

For example, suppose that PW Audio Supply has an unadjusted balance of $40,500 in Inventory. Through a physical count, PW Audio Supply determines that its actual merchandise inventory at December 31 is $40,000. The company would make an adjusting entry as follows.

| | | | | |
|---|---|---|---|---|
| Dec. 31 | Cost of Goods Sold | | 500 | |
| | Inventory ($40,500 – $40,000) | | | 500 |
| | (To adjust inventory to physical count) | | | |

A = L + OE
–500
–500 Exp

**Cash Flows**
no effect

## Closing Entries

A merchandising company, like a service company, closes to Income Summary all accounts that affect net income. In journalizing, the company credits all temporary accounts with debit balances, and debits all temporary accounts with credit balances, as the following shows for PW Audio Supply (see **Helpful Hint**). Note that PW Audio Supply closes Cost of Goods Sold to Income Summary.

| | | | | |
|---|---|---|---|---|
| Dec. 31 | Sales Revenue | | 480,000 | |
| | Income Summary | | | 480,000 |
| | (To close income statement accounts with credit balances) | | | |

**HELPFUL HINT**

**The easiest way to prepare the first two closing entries is to identify the temporary accounts by their balances and then prepare one entry for the credits and one for the debits.**

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| | | | |
|---|---|---|---|
| 31 | Income Summary | 450,000 | |
| | Sales Returns and Allowances | | 12,000 |
| | Sales Discounts | | 8,000 |
| | Cost of Goods Sold | | 316,000 |
| | Salaries and Wages Expense | | 64,000 |
| | Freight-Out | | 7,000 |
| | Advertising Expense | | 16,000 |
| | Utilities Expense | | 17,000 |
| | Depreciation Expense | | 8,000 |
| | Insurance Expense | | 2,000 |
| | (To close income statement accounts with debit balances) | | |
| 31 | Income Summary | 30,000 | |
| | Owner's Capital | | 30,000 |
| | (To close net income to capital) | | |
| 31 | Owner's Capital | 15,000 | |
| | Owner's Drawings | | 15,000 |
| | (To close drawings to capital) | | |

After PW Audio Supply has posted the closing entries, all temporary accounts have zero balances. Also, Owner's Capital has a balance that is carried over to the next period.

## Summary of Merchandising Entries

Illustration 5.8 summarizes the entries for the merchandising accounts using a perpetual inventory system.

**ILLUSTRATION 5.8** Daily recurring and adjusting and closing entries

| | Transactions | Daily Recurring Entries | Dr. | Cr. |
|---|---|---|---|---|
| Sales Transactions | Selling merchandise to customers. | Cash or Accounts Receivable | XX | |
| | | Sales Revenue | | XX |
| | | Cost of Goods Sold | XX | |
| | | Inventory | | XX |
| | Granting sales returns or allowances to customers. | Sales Returns and Allowances | XX | |
| | | Cash or Accounts Receivable | | XX |
| | | Inventory | XX | |
| | | Cost of Goods Sold | | XX |
| | Paying freight costs on sales; FOB destination. | Freight-Out | XX | |
| | | Cash | | XX |
| | Receiving payment from customers within discount period. | Cash | XX | |
| | | Sales Discounts | XX | |
| | | Accounts Receivable | | XX |
| Purchase Transactions | Purchasing merchandise for resale. | Inventory | XX | |
| | | Cash or Accounts Payable | | XX |
| | Paying freight costs on merchandise purchased; FOB shipping point. | Inventory | XX | |
| | | Cash | | XX |
| | Receiving purchase returns or allowances from suppliers. | Cash or Accounts Payable | XX | |
| | | Inventory | | XX |
| | Paying suppliers within discount period. | Accounts Payable | XX | |
| | | Inventory | | XX |
| | | Cash | | XX |

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**ILLUSTRATION 5.8** (*Continued*)

| Events | Adjusting and Closing Entries | | |
|---|---|---|---|
| Adjust because book amount is higher than the inventory amount determined to be on hand. | Cost of Goods Sold | XX | |
| | Inventory | | XX |
| Closing temporary accounts with credit balances. | Sales Revenue | XX | |
| | Income Summary | | XX |
| Closing temporary accounts with debit balances. | Income Summary | XX | |
| | Sales Returns and Allowances | | XX |
| | Sales Discounts | | XX |
| | Cost of Goods Sold | | XX |
| | Freight-Out | | XX |
| | Expenses | | XX |

## DO IT! 4 | Closing Entries

The trial balance of Celine's Sports Wear Shop at December 31 shows Inventory $25,000, Sales Revenue $162,400, Sales Returns and Allowances $4,800, Sales Discounts $3,600, Cost of Goods Sold $110,000, Rent Revenue $6,000, Freight-Out $1,800, Rent Expense $8,800, and Salaries and Wages Expense $22,000. Prepare the closing entries for the above accounts.

**ACTION PLAN**

- Close all temporary accounts with credit balances to Income Summary by debiting these accounts.
- Close all temporary accounts with debit balances, except drawings, to Income Summary by crediting these accounts.

### Solution

The two closing entries are:

| | | | |
|---|---|---|---|
| Dec. 31 | Sales Revenue | 162,400 | |
| | Rent Revenue | 6,000 | |
| | Income Summary | | 168,400 |
| | (To close accounts with credit balances) | | |
| 31 | Income Summary | 151,000 | |
| | Cost of Goods Sold | | 110,000 |
| | Sales Returns and Allowances | | 4,800 |
| | Sales Discounts | | 3,600 |
| | Freight-Out | | 1,800 |
| | Rent Expense | | 8,800 |
| | Salaries and Wages Expense | | 22,000 |
| | (To close accounts with debit balances) | | |

Related exercise material: **BE5.6, BE5.7, DO IT! 5.4, E5.6, E5.7, and E5.8.**

# Multiple-Step and Comprehensive Income Statements

**LEARNING OBJECTIVE 5**

Prepare a multiple-step income statement and a comprehensive income statement.

Merchandising companies widely use the classified balance sheet introduced in Chapter 4 and one of two forms for the income statement. This section explains the use of these financial statements by merchandisers.

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# Multiple-Step Income Statement

The **multiple-step income statement** is so named because it shows several steps in determining net income. Two of these steps relate to the company's principal operating activities. A multiple-step statement also distinguishes between **operating** and **nonoperating activities**. Finally, the statement highlights intermediate components of income and shows subgroupings of expenses.

## Income Statement Presentation of Sales

The multiple-step income statement begins by presenting **sales revenue**. It then deducts contra revenue accounts—sales returns and allowances, and sales discounts—from sales revenue to arrive at **net sales**. **Illustration 5.9** presents the sales section for PW Audio Supply, using assumed data.

**ILLUSTRATION 5.9**
**Computation of net sales**

**PW Audio Supply**
**Income Statement (partial)**

| | | |
|---|---|---|
| **Sales** | | |
| Sales revenue | | $480,000 |
| Less: Sales returns and allowances | $12,000 | |
| Sales discounts | 8,000 | 20,000 |
| **Net sales** | | **$460,000** |

## Gross Profit

**ALTERNATIVE TERMINOLOGY**
Gross profit is sometimes referred to as *gross margin*.

From Illustration 5.1, you learned that companies deduct cost of goods sold from sales revenue to determine **gross profit** (see **Alternative Terminology**). For this computation, companies use **net sales** (which takes into consideration Sales Returns and Allowances and Sales Discounts) as the amount of sales revenue. On the basis of the sales data in Illustration 5.9 (net sales of $460,000) and cost of goods sold under the perpetual inventory system (assume $316,000), PW Audio Supply's gross profit is $144,000, computed as shown in **Illustration 5.10**.

**ILLUSTRATION 5.10**
**Computation of gross profit**

| | |
|---|---|
| Net sales | $460,000 |
| Cost of goods sold | 316,000 |
| **Gross profit** | **$144,000** |

We also can express a company's gross profit as a percentage, called the **gross profit rate**. To do so, we divide the amount of gross profit by net sales. For PW Audio Supply, the **gross profit rate** is 31.3%, computed as shown in **Illustration 5.11**.

**ILLUSTRATION 5.11**
**Gross profit rate formula and computation**

| Gross Profit | ÷ | Net Sales | = | Gross Profit Rate |
|---|---|---|---|---|
| $144,000 | ÷ | $460,000 | = | 31.3% |

Analysts generally consider the gross profit **rate** to be more useful than the gross profit **amount**. The rate expresses a more meaningful (qualitative) relationship between net sales and gross profit. For example, a gross profit of $1,000,000 may sound impressive. But if it is the result of a gross profit rate of only 7%, it is not so impressive. The gross profit rate tells how many cents of each sales dollar go to gross profit.

Gross profit represents the **merchandising profit** of a company. It is not a measure of the overall profitability because operating expenses are not yet deducted. But managers and other interested parties closely watch the amount and trend of gross profit. They compare current gross profit with amounts reported in past periods. They also compare the company's gross profit rate with rates of competitors and with industry averages. Such comparisons provide

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information about the effectiveness of a company's purchasing function and the soundness of its pricing policies.

## Operating Expenses and Net Income

**Operating expenses** are the next component in measuring net income for a merchandising company. They are the expenses incurred in the process of earning sales revenue. These expenses are similar in merchandising and service companies. Companies sometimes segregate operating expenses into selling expenses and administrative expenses to provide additional information. Selling expenses include such items as expenses for sales salaries and advertising. Administrative expenses include such items as insurance expense and utility expense.

At PW Audio Supply, operating expenses were $114,000. The company determines its net income by subtracting operating expenses from gross profit. Thus, net income is $30,000, as **Illustration 5.12** shows.

| | |
|---|---|
| Gross profit | $144,000 |
| **Operating expenses** | **114,000** |
| Net income | $ 30,000 |

**ILLUSTRATION 5.12**
**Operating expenses in computing net income**

The net income amount is the so-called "bottom line" of a company's income statement.

## Nonoperating Activities

**Nonoperating activities** consist of various revenues and expenses and gains and losses that are unrelated to the company's main line of operations. When nonoperating items are included, the label "**Income from operations**" (or "Operating income") precedes them. This label clearly identifies the results of the company's normal operations, an amount determined by subtracting cost of goods sold and operating expenses from net sales. The results of nonoperating activities are shown in the categories "**Other revenues and gains**" and "**Other expenses and losses**." **Illustration 5.13** lists examples of each.

| Other Revenues and Gains |
|---|
| **Interest revenue** from notes receivable and marketable securities. |
| **Dividend revenue** from investments in common stock. |
| **Rent revenue** from subleasing a portion of the store. |
| **Gain** from the sale of property, plant, and equipment. |
| **Other Expenses and Losses** |
| **Interest expense** on notes and loans payable. |
| **Casualty losses** from recurring causes, such as vandalism and accidents. |
| **Loss** from the sale or abandonment of property, plant, and equipment. |
| **Loss** from strikes by employees and suppliers. |

**ILLUSTRATION 5.13**
**Other items of nonoperating activities**

Merchandising companies report the nonoperating activities in the income statement immediately after the company's operating activities. **Illustration 5.14** shows these sections for PW Audio Supply, using assumed data.

The distinction between operating and nonoperating activities is crucial to many external users of financial data. These users view operating income as sustainable and many nonoperating activities as non-recurring (see **Ethics Note**). Therefore, when forecasting next year's income, analysts put the most weight on this year's operating income and less weight on this year's nonoperating activities.

**ETHICS NOTE**

**Companies manage earnings in various ways. ConAgra Foods recorded a nonrecurring gain for $186 million from the sale of Pilgrim's Pride stock to help meet an earnings projection for the quarter.**

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**ILLUSTRATION 5.14**
**Multiple-step income statement**

**PW Audio Supply**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| **Sales** | | |
| Sales revenue | | $480,000 |
| Less: Sales returns and allowances | $12,000 | |
| Sales discounts | 8,000 | 20,000 |
| Net sales | | 460,000 |
| **Cost of goods sold** | | 316,000 |
| **Gross profit** | | 144,000 |
| **Operating expenses** | | |
| Salaries and wages expense | 64,000 | |
| Utilities expense | 17,000 | |
| Advertising expense | 16,000 | |
| Depreciation expense | 8,000 | |
| Freight-out | 7,000 | |
| Insurance expense | 2,000 | |
| Total operating expenses | | 114,000 |
| **Income from operations** | | 30,000 |
| **Other revenues and gains** | | |
| Interest revenue | 3,000 | |
| Gain on disposal of plant assets | 600 | 3,600 |
| **Other expenses and losses** | | |
| Interest expense | 1,800 | |
| Casualty loss from vandalism | 200 | 2,000 |
| **Net income** | | $ 31,600 |

Calculation of gross profit

Calculation of income from operations

Results of nonoperating activities

## Ethics Insight IBM

ImageRite/Getty Images, Inc.

### Disclosing More Details

After **Enron**, increased investor criticism and regulator scrutiny forced many companies to improve the clarity of their financial disclosures. For example, **IBM** began providing more detail regarding its "Other gains and losses." It had previously included these items in its selling, general, and administrative expenses, with little disclosure. For example, previously if IBM sold off one of its buildings at a gain, it would include this gain in the selling, general and administrative expense line item, thus reducing that expense. This made it appear that the company had done a better job of controlling operating expenses than it actually had.

As another example, when **eBay** sold the remainder of its investment in **Skype** to **Microsoft**, it reported a gain in "Other revenues and gains" of $1.7 billion. Since eBay's total income from operations was $2.4 billion, it was very important that the gain from the Skype sale not be buried in operating income.

**Why have investors and analysts demanded more accuracy in isolating "Other gains and losses" from operating items? (Go to WileyPLUS for this answer and additional questions.)**

# Single-Step Income Statement

Another income statement format is the **single-step income statement**. The statement is so named because only one step—subtracting total expenses from total revenues—is required in determining net income.

In a single-step statement, all data are classified into two categories: (1) **revenues**, which include both operating revenues and other revenues and gains; and (2) **expenses**, which include cost of goods sold, operating expenses, and other expenses and losses. **Illustration 5.15** shows a single-step statement for PW Audio Supply.

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**PW Audio Supply**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| **Revenues** | | |
| Net sales | | $460,000 |
| Interest revenue | | 3,000 |
| Gain on disposal of plant assets | | 600 |
| Total revenues | | 463,600 |
| **Expenses** | | |
| Cost of goods sold | $316,000 | |
| Operating expenses | 114,000 | |
| Interest expense | 1,800 | |
| Casualty loss from vandalism | 200 | |
| Total expenses | | 432,000 |
| **Net income** | | $ 31,600 |

**ILLUSTRATION 5.15**
**Single-step income statement**

There are two primary reasons for using the single-step format. (1) A company does not realize any type of profit or income until total revenues exceed total expenses, so it makes sense to divide the statement into these two categories. (2) The format is simpler and easier to read. *For homework problems, however, you should use the single-step format only when specifically instructed to do so.*

## Comprehensive Income Statement

Chapter 1 discussed the fair value principle. Accounting standards require companies to adjust the recorded values of certain types of assets and liabilities to their fair values at the end of each reporting period. In some instances, the unrealized gains or losses that result from adjusting recorded amounts to fair value are included in net income. However, in other cases, these unrealized gains and losses are not included in net income. Instead, these excluded items are reported as part of a more inclusive earnings measure, called **comprehensive income**. Examples of such items include certain adjustments to pension plan assets, gains and losses on foreign currency translation, and unrealized gains and losses on certain types of investments. Items that are excluded from net income but included in comprehensive income are either reported in a combined statement of net income and comprehensive income, or in a separate comprehensive income statement. The **comprehensive income statement** presents items that are not included in the determination of net income, referred to as other comprehensive income. **Illustration 5.16** shows how comprehensive income is presented in a separate comprehensive income statement. It assumes that PW Audio Supply had an unrealized gain of $2,300. *Use this format when preparing your homework.*

**PW Audio Supply**
**Comprehensive Income Statement**
**For the Year Ended December 31, 2020**

| | |
|---|---|
| Net income | $31,600 |
| Other comprehensive income | |
| Unrealized holding gain on investment securities | 2,300 |
| Comprehensive income | $33,900 |

**ILLUSTRATION 5.16**
**Combined statement of net income and comprehensive income**

## Classified Balance Sheet

In the balance sheet, merchandising companies report inventory as a current asset immediately below accounts receivable. Recall from Chapter 4 that companies generally list current asset items in the order of their closeness to cash (liquidity). Inventory is less close to cash than accounts receivable because the goods must first be sold and then collection made from

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the customer. Illustration 5.17 presents the assets section of a classified balance sheet for PW Audio Supply (see Helpful Hint).

**ILLUSTRATION 5.17** **Assets section of a classified balance sheet**

**PW Audio Supply**
**Balance Sheet (Partial)**
**December 31, 2020**

| Assets | | |
|---|---|---|
| Current assets | | |
| Cash | | $ 9,500 |
| Accounts receivable | | 16,100 |
| Inventory | | 40,000 |
| Prepaid insurance | | 1,800 |
| Total current assets | | 67,400 |
| Property, plant, and equipment | | |
| Equipment | $80,000 | |
| Less: Accumulated depreciation—equipment | 24,000 | 56,000 |
| Total assets | | $123,400 |

**HELPFUL HINT**

**The $40,000 is the cost of the inventory on hand, not its expected selling price.**

## DO IT! 5 | Multiple-Step Income Statement

The following information is available for Art Center for the year ended December 31, 2020.

| | | | |
|---|---|---|---|
| Other revenues and gains | $ 8,000 | Sales revenue | $462,000 |
| Other expenses and losses | 3,000 | Operating expenses | 187,000 |
| Cost of goods sold | 147,000 | Sales discounts | 20,000 |
| | | Other comprehensive loss | 10,000 |

Prepare a multiple-step income statement and comprehensive income statement for Art Center.

**ACTION PLAN**

- **Subtract cost of goods sold from net sales to determine gross profit.**
- **Subtract operating expenses from gross profit to determine income from operations.**
- **Add/subtract nonoperating items to determine net income.**

### Solution

**Art Center**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Sales | | |
| Sales revenue | | $462,000 |
| Sales discounts | | 20,000 |
| Net sales | | 442,000 |
| Cost of goods sold | | 147,000 |
| Gross profit | | 295,000 |
| Operating expenses | | 187,000 |
| Income from operations | | 108,000 |
| Other revenues and gains | $8,000 | |
| Other expenses and losses | 3,000 | 5,000 |
| Net income | | $113,000 |

**Art Center**
**Comprehensive Income Statement**
**For the Year Ended December 31, 2020**

| | |
|---|---|
| Net income | $113,000 |
| Other comprehensive loss | 10,000 |
| Comprehensive income | $103,000 |

Related exercise material: **BE5.8, BE5.9, DO IT! 5.5, E5.9, E5.10, E5.12, E5.13, and E5.14.**

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# Appendix 5A Worksheet for a Merchandising Company

**LEARNING OBJECTIVE *6**

Prepare a worksheet for a merchandising company.

## Using a Worksheet

As indicated in Chapter 4, a worksheet enables companies to prepare financial statements before they journalize and post adjusting entries. The steps in preparing a worksheet for a merchandising company are the same as for a service company. Illustration 5A.1 shows the worksheet for PW Audio Supply (excluding nonoperating items). The unique accounts for a merchandiser using a **perpetual inventory system** are in red.

**ILLUSTRATION 5A.1** Worksheet for merchandising company—perpetual inventory system

PW Audio Supply

Home | Insert | Page Layout | Formulas | Data | Review | View

P18

**PW Audio Supply**
**Worksheet**
**For the Year Ended December 31, 2020**

| Accounts | Trial Balance Dr. | Trial Balance Cr. | Adjustments Dr. | Adjustments Cr. | Adjusted Trial Balance Dr. | Adjusted Trial Balance Cr. | Income Statement Dr. | Income Statement Cr. | Balance Sheet Dr. | Balance Sheet Cr. |
|---|---|---|---|---|---|---|---|---|---|---|
| Cash | 9,500 | | | | 9,500 | | | | 9,500 | |
| Accounts Receivable | 16,100 | | | | 16,100 | | | | 16,100 | |
| Inventory | 40,500 | | | (a) 500 | 40,000 | | | | 40,000 | |
| Prepaid Insurance | 3,800 | | | (b) 2,000 | 1,800 | | | | 1,800 | |
| Equipment | 80,000 | | | | 80,000 | | | | 80,000 | |
| Accumulated Depreciation—Equipment | | 16,000 | | (c) 8,000 | | 24,000 | | | | 24,000 |
| Accounts Payable | | 20,400 | | | | 20,400 | | | | 20,400 |
| Owner's Capital | | 83,000 | | | | 83,000 | | | | 83,000 |
| Owner's Drawings | 15,000 | | | | 15,000 | | | | 15,000 | |
| Sales Revenue | | 480,000 | | | | 480,000 | | 480,000 | | |
| Sales Returns and Allowances | 12,000 | | | | 12,000 | | 12,000 | | | |
| Sales Discounts | 8,000 | | | | 8,000 | | 8,000 | | | |
| Cost of Goods Sold | 315,500 | | (a) 500 | | 316,000 | | 316,000 | | | |
| Freight-Out | 7,000 | | | | 7,000 | | 7,000 | | | |
| Advertising Expense | 16,000 | | | | 16,000 | | 16,000 | | | |
| Salaries and Wages Expense | 59,000 | | (d) 5,000 | | 64,000 | | 64,000 | | | |
| Utilities Expense | 17,000 | | | | 17,000 | | 17,000 | | | |
| Totals | 599,400 | 599,400 | | | | | | | | |
| Insurance Expense | | | (b) 2,000 | | 2,000 | | 2,000 | | | |
| Depreciation Expense | | | (c) 8,000 | | 8,000 | | 8,000 | | | |
| Salaries and Wages Payable | | | | (d) 5,000 | | 5,000 | | | | 5,000 |
| Totals | | | 15,500 | 15,500 | 612,400 | 612,400 | 450,000 | 480,000 | 162,400 | 132,400 |
| Net Income | | | | | | | 30,000 | | | 30,000 |
| Totals | | | | | | | 480,000 | 480,000 | 162,400 | 162,400 |

Key: (a) Adjustment to inventory on hand. (b) Insurance expired. (c) Depreciation expense. (d) Salaries and wages accrued.

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### Trial Balance Columns

Data for the trial balance come from the ledger balances of PW Audio Supply at December 31. The amount shown for Inventory, $40,500, is the year-end inventory amount from the perpetual inventory system.

### Adjustments Columns

A merchandising company generally has the same types of adjustments as a service company. As you see in the worksheet, adjustments (b), (c), and (d) are for insurance, depreciation, and salaries. Pioneer Advertising, as illustrated in Chapters 3 and 4, also had these adjustments. Adjustment (a) was required to adjust the perpetual inventory carrying amount to the actual count.

After PW Audio Supply enters all adjustments data on the worksheet, it establishes the equality of the adjustments column totals. It then extends the balances in all accounts to the adjusted trial balance columns.

### Adjusted Trial Balance

The adjusted trial balance shows the balance of all accounts after adjustment at the end of the accounting period.

### Income Statement Columns

Next, the merchandising company transfers the accounts and balances that affect the income statement from the adjusted trial balance columns to the income statement columns. PW Audio Supply shows Sales Revenue of $480,000 in the credit column. It shows the contra revenue accounts Sales Returns and Allowances $12,000 and Sales Discounts $8,000 in the debit column. The difference of $460,000 is the net sales shown on the income statement (Illustration 5.14).

Finally, the company totals all the credits in the income statement column and compares those totals to the total of the debits in the income statement column. If the credits exceed the debits, the company has net income. PW Audio Supply has net income of $30,000. If the debits exceed the credits, the company would report a net loss.

### Balance Sheet Columns

The major difference between the balance sheets of a service company and a merchandiser is inventory. PW Audio Supply shows the ending inventory amount of $40,000 in the balance sheet debit column. The information to prepare the owner's equity statement is also found in these columns. That is, the Owner's Capital account is $83,000. Owner's Drawings are $15,000. Net income results when the total of the debit column exceeds the total of the credit column in the balance sheet columns. A net loss results when the total of the credits exceeds the total of the debit balances.

## Appendix 5B Periodic Inventory System

**LEARNING OBJECTIVE *7**

Record purchases and sales under a periodic inventory system.

As described in this chapter, companies may use one of two basic systems of accounting for inventories: (1) the perpetual inventory system or (2) the periodic inventory system. In the chapter, we focused on the characteristics of the perpetual inventory system. In this appendix, we discuss and illustrate the **periodic inventory system**. One key difference between the two systems is the point at which the company computes cost of goods sold. For a visual reminder of this difference, refer back to Illustration 5.5.

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## Determining Cost of Goods Sold Under a Periodic System

Determining cost of goods sold is different when a periodic inventory system is used rather than a perpetual system. As you have seen, a company using a **perpetual system** makes an entry to record cost of goods sold and to reduce inventory each time a sale is made. A company using a **periodic system** does not determine cost of goods sold until the end of the period. At the end of the period, the company performs a count to determine the ending balance of inventory. It then **calculates cost of goods sold by subtracting ending inventory from the cost of goods available for sale**. Cost of goods available for sale is the sum of beginning inventory plus purchases, as shown in **Illustration 5B.1**.

| | |
|---|---|
| | Beginning Inventory |
| + | Cost of Goods Purchased |
| | Cost of Goods Available for Sale |
| − | Ending Inventory |
| | **Cost of Goods Sold** |

**ILLUSTRATION 5B.1**
**Basic formula for cost of goods sold using the periodic system**

Another difference between the two approaches is that the perpetual system directly adjusts the Inventory account for any transaction that affects inventory (such as freight costs, returns, and discounts). The periodic system does not do this. Instead, it creates different accounts for purchases, freight costs, returns, and discounts. These various accounts are shown in **Illustration 5B.2**, which presents the calculation of cost of goods sold for PW Audio Supply using the periodic approach (see **Helpful Hint**).

**PW Audio Supply**
**Cost of Goods Sold**
**For the Year Ended December 31, 2020**

| | | | |
|---|---|---|---|
| Cost of goods sold | | | |
| **Inventory, January 1** | | | **$ 36,000** |
| Purchases | | $325,000 | |
| Less: Purchase returns and allowances | $10,400 | | |
| Purchase discounts | 6,800 | 17,200 | |
| Net purchases | | 307,800 | |
| Add: Freight-in | | 12,200 | |
| **Cost of goods purchased** | | | **320,000** |
| Cost of goods available for sale | | | 356,000 |
| **Less: Inventory, December 31** | | | **40,000** |
| **Cost of goods sold** | | | **$316,000** |

**ILLUSTRATION 5B.2**
**Cost of goods sold for a merchandiser using a periodic inventory system**

**HELPFUL HINT**
The far right column identifies the primary items that make up cost of goods sold of $316,000. The middle column explains cost of goods purchased of $320,000. The left column reports contra purchase items of $17,200.

Note that the basic elements from Illustration 5B.1 are highlighted in Illustration 5B.2. You will learn more in Chapter 6 about how to determine cost of goods sold using the periodic system.

The use of the periodic inventory system does not affect the form of presentation in the balance sheet. As under the perpetual system, a company reports inventory in the current assets section.

## Recording Merchandise Transactions

In a **periodic inventory system**, companies record revenues from the sale of merchandise when sales are made, just as in a perpetual system. Unlike the perpetual system, however, companies **do not attempt on the date of sale to record the cost of the merchandise sold**.

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Instead, they take a physical inventory count at the **end of the period** to determine (1) the cost of the merchandise then on hand and (2) the cost of the goods sold during the period. And, **under a periodic system, companies record purchases of merchandise in the Purchases account rather than in the Inventory account**. Purchase returns and allowances, purchase discounts, and freight costs on purchases are recorded in separate accounts.

To illustrate the recording of merchandise transactions under a periodic inventory system, we will use purchase/sales transactions between PW Audio Supply and Sauk Stereo, as illustrated for the perpetual inventory system in this chapter.

# Recording Purchases of Merchandise

**HELPFUL HINT**

**Be careful not to debit purchases of equipment or supplies to a Purchases account.**

On the basis of the sales invoice (Illustration 5.6) and receipt of the merchandise ordered from PW Audio Supply, Sauk Stereo records the $3,800 purchase as follows (see **Helpful Hint**).

| | | | |
|---|---|---|---|
| May 4 | Purchases | 3,800 | |
| | Accounts Payable | | 3,800 |
| | (To record goods purchased on account from PW Audio Supply) | | |

Purchases is a temporary account whose normal balance is a debit.

## Freight Costs

When the purchaser directly incurs the freight costs, it debits the account Freight-In (or Transportation-In). For example, if Sauk Stereo pays Public Carrier Co. $150 for freight charges on its purchase from PW Audio Supply on May 6, the entry on Sauk Stereo's books is as follows.

| | | | |
|---|---|---|---|
| May 6 | Freight-In (Transportation-In) | 150 | |
| | Cash | | 150 |
| | (To record payment of freight on goods purchased) | | |

Like Purchases, Freight-In is a temporary account whose normal balance is a debit. **Freight-In is part of cost of goods purchased.** The reason is that cost of goods purchased should include any freight charges necessary to bring the goods to the purchaser. Freight costs are not subject to a purchase discount. Purchase discounts apply only to the invoice cost of the merchandise.

## Purchase Returns and Allowances

Sauk Stereo returns goods costing $300 to PW Audio Supply and prepares the following entry to recognize the return.

| | | | |
|---|---|---|---|
| May 8 | Accounts Payable | 300 | |
| | Purchase Returns and Allowances | | 300 |
| | (To record return of goods purchased from PW Audio Supply) | | |

Purchase Returns and Allowances is a temporary account whose normal balance is a credit.

## Purchase Discounts

On May 14, Sauk Stereo pays the balance due on account to PW Audio Supply, taking the 2% cash discount allowed by PW Audio Supply for payment within 10 days. Sauk Stereo records the payment and discount as follows.

| | | | |
|---|---|---|---|
| May 14 | Accounts Payable ($3,800 – $300) | 3,500 | |
| | Purchase Discounts ($3,500 × .02) | | 70 |
| | Cash | | 3,430 |
| | (To record payment within the discount period) | | |

Purchase Discounts is a temporary account whose normal balance is a credit.

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# Recording Sales of Merchandise

The seller, PW Audio Supply, records the sale of $3,800 of merchandise to Sauk Stereo on May 4 (sales invoice No. 731, Illustration 5.6) as follows.

| | | | |
|---|---|---|---|
| May 4 | Accounts Receivable | 3,800 | |
| | Sales Revenue | | 3,800 |
| | (To record credit sales per invoice #731 to Sauk Stereo) | | |

## Sales Returns and Allowances

To record the returned goods received from Sauk Stereo on May 8, PW Audio Supply records the $300 sales return as follows.

| | | | |
|---|---|---|---|
| May 8 | Sales Returns and Allowances | 300 | |
| | Accounts Receivable | | 300 |
| | (To record credit granted to Sauk Stereo for returned goods) | | |

## Sales Discounts

On May 14, PW Audio Supply receives payment of $3,430 on account from Sauk Stereo. PW Audio Supply honors the 2% cash discount and records the payment of Sauk Stereo's account receivable in full as follows.

| | | | |
|---|---|---|---|
| May 14 | Cash | 3,430 | |
| | Sales Discounts ($3,500 × .02) | 70 | |
| | Accounts Receivable ($3,800 – $300) | | 3,500 |
| | (To record collection within 2/10, n/30 discount period from Sauk Stereo) | | |

## Comparison of Entries—Perpetual vs. Periodic

**Illustration 5B.3** summarizes the periodic inventory entries shown in this appendix and compares them to the perpetual system entries from the chapter. Entries that differ in the two systems are shown in color.

**ILLUSTRATION 5B.3** **Comparison of entries for perpetual and periodic inventory systems**

**ENTRIES ON SAUK STEREO'S BOOKS**

| | | Transaction | Perpetual Inventory System | | | Periodic Inventory System | | |
|---|---|---|---|---|---|---|---|---|
| May | 4 | Purchase of merchandise on credit. | **Inventory** | **3,800** | | **Purchases** | **3,800** | |
| | | | Accounts Payable | | 3,800 | Accounts Payable | | 3,800 |
| | 6 | Freight costs on purchases. | **Inventory** | **150** | | **Freight-In** | **150** | |
| | | | Cash | | 150 | Cash | | 150 |
| | 8 | Purchase returns and allowances. | Accounts Payable | 300 | | Accounts Payable | 300 | |
| | | | **Inventory** | | **300** | **Purchase Returns and Allowances** | | **300** |
| | 14 | Payment on account with a discount. | Accounts Payable | 3,500 | | Accounts Payable | 3,500 | |
| | | | Cash | | 3,430 | Cash | | 3,430 |
| | | | **Inventory** | | **70** | **Purchase Discounts** | | **70** |

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**ILLUSTRATION 5B.3** (*Continued*)

**ENTRIES ON PW AUDIO SUPPLY'S BOOKS**

| | | Transaction | Perpetual Inventory System | | | Periodic Inventory System | | |
|---|---|---|---|---|---|---|---|---|
| May | 4 | Sale of merchandise on credit. | Accounts Receivable | 3,800 | | Accounts Receivable | 3,800 | |
| | | | Sales Revenue | | 3,800 | Sales Revenue | | 3,800 |
| | | | **Cost of Goods Sold** | **2,400** | | **No entry for cost of goods sold** | | |
| | | | **Inventory** | | **2,400** | | | |
| | 8 | Return of merchandise sold. | Sales Returns and Allowances | 300 | | Sales Returns and Allowances | 300 | |
| | | | Accounts Receivable | | 300 | Accounts Receivable | | 300 |
| | | | **Inventory** | **140** | | **No entry** | | |
| | | | **Cost of Goods Sold** | | **140** | | | |
| | 14 | Cash received on account with a discount. | Cash | 3,430 | | Cash | 3,430 | |
| | | | Sales Discounts | 70 | | Sales Discounts | 70 | |
| | | | Accounts Receivable | | 3,500 | Accounts Receivable | | 3,500 |

# Journalizing and Posting Closing Entries

For a merchandising company, like a service company, all accounts that affect the determination of net income are closed to Income Summary. Data for the preparation of closing entries may be obtained from the income statement columns of the worksheet. In journalizing, all debit column amounts are credited, and all credit columns amounts are debited. To close the merchandise inventory in a periodic inventory system:

1. The beginning inventory balance is debited to Income Summary and credited to Inventory.
2. The ending inventory balance is debited to Inventory and credited to Income Summary.

The two entries for PW Audio Supply are as follows.

(1)

| | | | |
|---|---|---|---|
| Dec. 31 | Income Summary | 36,000 | |
| | Inventory | | 36,000 |
| | (To close beginning inventory) | | |

(2)

| | | | |
|---|---|---|---|
| 31 | Inventory | 40,000 | |
| | Income Summary | | 40,000 |
| | (To record ending inventory) | | |

**Illustration 5B.4** shows the Inventory and Income Summary accounts after posting.

**ILLUSTRATION 5B.4**
**Posting closing entries for merchandise inventory**

**Inventory**

| | | | | | |
|---|---|---|---|---|---|
| 1/1 | Bal. | 36,000 | 12/31 | Close | **36,000** |
| 12/31 | Close | **40,000** | | | |
| 12/31 | Bal. | 40,000 | | | |

**Income Summary**

| | | | | | |
|---|---|---|---|---|---|
| 12/31 | Close | **36,000** | 12/31 | Close | **40,000** |

**HELPFUL HINT**

**Except for merchandise inventory, the easiest way to prepare the first two closing entries is to identify the temporary accounts by their balances and then prepare one entry for the credits and one for the debits.**

Often, the closing of inventory is included with other closing entries, as shown below for PW Audio Supply (see **Helpful Hint**). (*Close inventory with other accounts in homework problems unless stated otherwise.*)

| | | | |
|---|---|---|---|
| Dec. 31 | **Inventory (Dec. 31)** | **40,000** | |
| | Sales Revenue | 480,000 | |
| | Purchase Returns and Allowances | 10,400 | |
| | Purchase Discounts | 6,800 | |
| | Income Summary | | 537,200 |
| | (To record ending inventory and close accounts with credit balances) | | |

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| | | | |
|---|---|---|---|
| 31 | Income Summary | 507,200 | |
| | **Inventory (Jan. 1)** | | **36,000** |
| | Sales Returns and Allowances | | 12,000 |
| | Sales Discounts | | 8,000 |
| | Purchases | | 325,000 |
| | Freight-In | | 12,200 |
| | Salaries and Wages Expense | | 64,000 |
| | Freight-Out | | 7,000 |
| | Advertising Expense | | 16,000 |
| | Utilities Expense | | 17,000 |
| | Depreciation Expense | | 8,000 |
| | Insurance Expense | | 2,000 |
| | (To close beginning inventory and other income statement accounts with debit balances) | | |
| 31 | Income Summary | 30,000 | |
| | Owner's Capital | | 30,000 |
| | (To transfer net income to capital) | | |
| 31 | Owner's Capital | 15,000 | |
| | Owner's Drawings | | 15,000 |
| | (To close drawings to capital) | | |

After the closing entries are posted, all temporary accounts have zero balances. In addition, Owner's Capital has a credit balance of $98,000: beginning balance + net income – drawings ($83,000 + $30,000 – $15,000).

# Using a Worksheet

As indicated in Chapter 4, a worksheet enables companies to prepare financial statements before journalizing and posting adjusting entries. The steps in preparing a worksheet for a merchandising company are the same as they are for a service company.

## Trial Balance Columns

Data for the trial balance come from the ledger balances of PW Audio Supply at December 31. The amount shown for Inventory, $36,000, is the beginning inventory amount from the periodic inventory system.

## Adjustments Columns

A merchandising company generally has the same types of adjustments as a service company. As you see in the worksheet in **Illustration 5B.5**, adjustments (a), (b), and (c) are for insurance, depreciation, and salaries and wages. These adjustments were also required for Pioneer Advertising, as illustrated in Chapters 3 and 4. The unique accounts for a merchandiser using a **periodic inventory system** are shown in capital red letters. Note, however, that the worksheet excludes nonoperating items.

After all adjustment data are entered on the worksheet, the equality of the adjustment column totals is established. The balances in all accounts are then extended to the adjusted trial balance columns.

## Income Statement Columns

Next, PW Audio Supply transfers the accounts and balances that affect the income statement from the adjusted trial balance columns to the income statement columns. The company shows Sales Revenue of $480,000 in the credit column. It shows the contra revenue accounts, Sales Returns and Allowances of $12,000 and Sales Discounts of $8,000 in the debit column. The difference of $460,000 is the net sales shown on the income statement (Illustration 5.9).

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**ILLUSTRATION 5B.5** **Worksheet for merchandising company—periodic inventory system**

PW Audio Supply

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

**PW Audio Supply**
**Worksheet**
**For the Year Ended December 31, 2020**

| Accounts | Trial Balance Dr. | Trial Balance Cr. | Adjustments Dr. | Adjustments Cr. | Adjusted Trial Balance Dr. | Adjusted Trial Balance Cr. | Income Statement Dr. | Income Statement Cr. | Balance Sheet Dr. | Balance Sheet Cr. |
|---|---|---|---|---|---|---|---|---|---|---|
| Cash | 9,500 | | | | 9,500 | | | | 9,500 | |
| Accounts Receivable | 16,100 | | | | 16,100 | | | | 16,100 | |
| INVENTORY | 36,000 | | | | 36,000 | | 36,000 | 40,000 | 40,000 | |
| Prepaid Insurance | 3,800 | | | (a) 2,000 | 1,800 | | | | 1,800 | |
| Equipment | 80,000 | | | | 80,000 | | | | 80,000 | |
| Accumulated Depreciation—Equipment | | 16,000 | | (b) 8,000 | | 24,000 | | | | 24,000 |
| Accounts Payable | | 20,400 | | | | 20,400 | | | | 20,400 |
| Owner's Capital | | 83,000 | | | | 83,000 | | | | 83,000 |
| Owner's Drawings | 15,000 | | | | 15,000 | | | | 15,000 | |
| SALES REVENUE | | 480,000 | | | | 480,000 | | 480,000 | | |
| SALES RETURNS AND ALLOWANCES | 12,000 | | | | 12,000 | | 12,000 | | | |
| SALES DISCOUNTS | 8,000 | | | | 8,000 | | 8,000 | | | |
| PURCHASES | 325,000 | | | | 325,000 | | 325,000 | | | |
| PURCHASE RETURNS AND ALLOWANCES | | 10,400 | | | | 10,400 | | 10,400 | | |
| PURCHASE DISCOUNTS | | 6,800 | | | | 6,800 | | 6,800 | | |
| FREIGHT-IN | 12,200 | | | | 12,200 | | 12,200 | | | |
| Freight-Out | 7,000 | | | | 7,000 | | 7,000 | | | |
| Advertising Expense | 16,000 | | | | 16,000 | | 16,000 | | | |
| Salaries and Wages Expense | 59,000 | | (c) 5,000 | | 64,000 | | 64,000 | | | |
| Utilities Expense | 17,000 | | | | 17,000 | | 17,000 | | | |
| Totals | 616,600 | 616,600 | | | | | | | | |
| Insurance Expense | | | (a) 2,000 | | 2,000 | | 2,000 | | | |
| Depreciation Expense | | | (b) 8,000 | | 8,000 | | 8,000 | | | |
| Salaries and Wages Payable | | | | (c) 5,000 | | 5,000 | | | | 5,000 |
| Totals | | | 15,000 | 15,000 | 629,600 | 629,600 | 507,200 | 537,200 | 162,400 | 132,400 |
| Net Income | | | | | | | 30,000 | | | 30,000 |
| Totals | | | | | | | 537,200 | 537,200 | 162,400 | 162,400 |

Key: (a) Insurance expired. (b) Depreciation expense. (c) Salaries and wages accrued.

Similarly, Purchases of $325,000 and Freight-In of $12,200 are extended to the debit column. The contra purchase accounts, Purchase Returns and Allowances of $10,400 and Purchase Discounts of $6,800, are extended to the credit columns.

The worksheet procedures for the Inventory account merit specific comment. The procedures are:

1. The beginning balance, $36,000, is extended from the adjusted trial balance column to the **income statement debit column**. From there, it can be added in reporting cost of goods available for sale in the income statement.
2. The ending inventory, $40,000, is added to the worksheet by an **income statement credit and a balance sheet debit**. The credit makes it possible to deduct ending inventory from

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the cost of goods available for sale in the income statement to determine cost of goods sold. The debit means the ending inventory can be reported as an asset on the balance sheet.

**Illustration 5B.6** shows these two procedures.

| | | Income Statement | | | Balance Sheet | |
|---|---|---|---|---|---|---|
| | | Dr. | Cr. | | Dr. | Cr. |
| Inventory | (1) | 36,000 | 40,000 | (2) | 40,000 | |

**ILLUSTRATION 5B.6**
**Worksheet procedures for inventories**

The computation for cost of goods sold, taken from the income statement column in Illustration 5B.5, is as shown in **Illustration on 5B.7** (see **Helpful Hint**).

| Debit Column | | Credit Column | |
|---|---|---|---|
| Beginning inventory | $ 36,000 | Ending inventory | $40,000 |
| Purchases | 325,000 | Purchase returns and allowances | 10,400 |
| Freight-in | 12,200 | Purchase discounts | 6,800 |
| Total debits | 373,200 | Total credits | $57,200 |
| Less: Total credits | 57,200 | | |
| Cost of goods sold | $316,000 | | |

**ILLUSTRATION 5B.7**
**Computation of cost of goods sold from worksheet columns**

**HELPFUL HINT**
In a periodic system, cost of goods sold is a computation—it is not a separate account with a balance.

Finally, PW Audio Supply totals all the credits in the income statement column and compares these totals to the total of the debits in the income statement column. If the credits exceed the debits, the company has net income. PW Audio Supply has net income of $30,000. If the debits exceed the credits, the company would report a net loss.

### Balance Sheet Columns

The major difference between the balance sheets of a service company and a merchandising company is inventory. PW Audio Supply shows ending inventory of $40,000 in the balance sheet debit column. The information to prepare the owner's equity statement is also found in these columns. That is, the Owner's Capital account is $83,000. Owner's Drawings are $15,000. Net income results when the total of the debit column exceeds the total of the credit column in the balance sheet columns. A net loss results when the total of the credits exceeds the total of the debit balances.

# Review and Practice

## Learning Objectives Review

**1 Describe merchandising operations and inventory systems.**

Because of inventory, a merchandising company has sales revenue, cost of goods sold, and gross profit. To account for inventory, a merchandising company must choose between a perpetual and a periodic inventory system.

**2 Record purchases under a perpetual inventory system.**

The company debits the Inventory account for all purchases of merchandise and freight-in, and credits it for purchase discounts and purchase returns and allowances.

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**3 Record sales under a perpetual inventory system.**

When a merchandising company sells inventory, it debits Accounts Receivable (or Cash) and credits Sales Revenue for the **selling price** of the merchandise. At the same time, it debits Cost of Goods Sold and credits Inventory for the **cost** of the inventory items sold. Sales Returns and Allowances and Sales Discounts are debited and are contra revenue accounts.

**4 Apply the steps in the accounting cycle to a merchandising company.**

Each of the required steps in the accounting cycle for a service company applies to a merchandising company. A worksheet is again an optional step. Under a perpetual inventory system, the company must adjust the Inventory account to agree with the physical count.

**5 Prepare a multiple-step income statement and a comprehensive income statement.**

A multiple-step income statement shows numerous steps in determining net income, including nonoperating activities sections. A single-step income statement classifies all data under two categories, revenues or expenses, and determines net income in one step. A comprehensive income statement adds or subtracts any items of other comprehensive income to net income to arrive at comprehensive income.

***6 Prepare a worksheet for a merchandising company.**

The steps in preparing a worksheet for a merchandising company are the same as for a service company. The unique accounts for a merchandiser are Inventory, Sales Revenue, Sales Returns and Allowances, Sales Discounts, and Cost of Goods Sold.

***7 Record purchases and sales under a periodic inventory system.**

In recording purchases under a periodic system, companies must make entries for (a) cash and credit purchases, (b) purchase returns and allowances, (c) purchase discounts, and (d) freight costs. In recording sales, companies must make entries for (a) cash and credit sales, (b) sales returns and allowances, and (c) sales discounts.

## Glossary Review

**Comprehensive income** An income measure that includes gains and losses that are excluded from the determination of net income. (p. 5-21).

**Comprehensive income statement** A statement that presents items that are not included in the determination of net income, referred to as other comprehensive income. (p. 5-21).

**Contra revenue account** An account that is offset against a revenue account on the income statement. (p. 5-13).

**Cost of goods sold** The total cost of merchandise sold during the period. (p. 5-3).

**FOB destination** Freight terms indicating that the seller places the goods free on board to the buyer's place of business, and the seller pays the freight. (p. 5-8).

**FOB shipping point** Freight terms indicating that the seller places goods free on board the carrier, and the buyer pays the freight costs. (p. 5-8).

**Gross profit** The excess of net sales over the cost of goods sold. (p. 5-18).

**Gross profit rate** Gross profit expressed as a percentage, by dividing the amount of gross profit by net sales. (p. 5-18).

**Income from operations** Income from a company's principal operating activity; determined by subtracting cost of goods sold and operating expenses from net sales. (p. 5-19).

**Multiple-step income statement** An income statement that shows several steps in determining net income. (p. 5-18).

**Net sales** Sales revenue less sales returns and allowances and less sales discounts. (p. 5-18).

**Nonoperating activities** Various revenues, expenses, gains, and losses that are unrelated to a company's main line of operations. (p. 5-19).

**Operating expenses** Expenses incurred in the process of earning sales revenue. (p. 5-19).

**Other expenses and losses** A nonoperating-activities section of the income statement that shows expenses and losses unrelated to the company's main line of operations. (p. 5-19).

**Other revenues and gains** A nonoperating-activities section of the income statement that shows revenues and gains unrelated to the company's main line of operations. (p. 5-19).

**Periodic inventory system** An inventory system under which the company does not keep detailed inventory records throughout the accounting period but determines the cost of goods sold only at the end of an accounting period. (p. 5-5).

**Perpetual inventory system** An inventory system under which the company keeps detailed records of the cost of each inventory purchase and sale, and the records continuously show the inventory that should be on hand. (p. 5-4).

**Purchase allowance** A deduction made to the selling price of merchandise, granted by the seller so that the buyer will keep the merchandise. (p. 5-9).

**Purchase discount** A cash discount claimed by a buyer for prompt payment of a balance due. (p. 5-9).

**Purchase invoice** A document that supports each credit purchase. (p. 5-7).

**Purchase return** A return of goods from the buyer to the seller for a cash or credit refund. (p. 5-9).

**Sales discount** A reduction given by a seller for prompt payment of a credit sale. (p. 5-13).

**Sales invoice** A document that supports each credit sale. (p. 5-11).

**Sales returns and allowances** Purchase returns and allowances from the seller's perspective. See *Purchase return* and *Purchase allowance,* above. (p. 5-12).

**Sales revenue (Sales)** The primary source of revenue in a merchandising company. (p. 5-3).

**Single-step income statement** An income statement that shows only one step in determining net income. (p. 5-20).

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## Practice Multiple-Choice Questions

**1.** **(LO 1)** Gross profit will result if:

**a.** operating expenses are less than net income.

**b.** net sales are greater than operating expenses.

**c.** net sales are greater than cost of goods sold.

**d.** operating expenses are greater than cost of goods sold.

**2.** **(LO 2)** Under a perpetual inventory system, when goods are purchased for resale by a company:

**a.** purchases on account are debited to Inventory.

**b.** purchases on account are debited to Purchases.

**c.** purchase returns are debited to Purchase Returns and Allowances.

**d.** freight costs are debited to Freight-Out.

**3.** **(LO 3)** The sales accounts that normally have a debit balance are:

**a.** Sales Discounts.

**b.** Sales Returns and Allowances.

**c.** Both (a) and (b).

**d.** Neither (a) nor (b).

**4.** **(LO 3)** A credit sale of $750 is made on June 13, terms 2/10, net/30. A return of $50 is granted on June 16. The amount received as payment in full on June 23 is:

**a.** $700. **c.** $685.

**b.** $686. **d.** $650.

**5.** **(LO 2)** Which of the following accounts will normally appear in the ledger of a merchandising company that uses a perpetual inventory system?

**a.** Purchases. **c.** Cost of Goods Sold.

**b.** Freight-In. **d.** Purchase Discounts.

**6.** **(LO 3)** To record the sale of goods for cash in a perpetual inventory system:

**a.** only one journal entry is necessary to record cost of goods sold and reduction of inventory.

**b.** only one journal entry is necessary to record the receipt of cash and the sales revenue.

**c.** two journal entries are necessary: one to record the receipt of cash and sales revenue, and one to record the cost of goods sold and reduction of inventory.

**d.** two journal entries are necessary: one to record the receipt of cash and reduction of inventory, and one to record the cost of goods sold and sales revenue.

**7.** **(LO 4)** The steps in the accounting cycle for a merchandising company are the same as those in a service company **except**:

**a.** an additional adjusting journal entry for inventory may be needed in a merchandising company.

**b.** closing journal entries are not required for a merchandising company.

**c.** a post-closing trial balance is not required for a merchandising company.

**d.** a multiple-step income statement is required for a merchandising company.

**8.** **(LO 5)** The multiple-step income statement for a merchandising company shows each of the following features **except**:

**a.** gross profit.

**b.** cost of goods sold.

**c.** a sales section.

**d.** an investing activities section.

**9.** **(LO 5)** If net sales are $400,000, cost of goods sold is $310,000, and operating expenses are $60,000, the gross profit is:

**a.** $30,000. **c.** $340,000.

**b.** $90,000. **d.** $400,000.

**10.** **(LO 5)** A single-step income statement:

**a.** reports gross profit.

**b.** does not report cost of goods sold.

**c.** reports sales revenue and "Other revenues and gains" in the revenues section of the income statement.

**d.** reports operating income separately.

**11.** **(LO 5)** Which of the following appears on both a single-step and a multiple-step income statement?

**a.** Inventory.

**b.** Gross profit.

**c.** Income from operations.

**d.** Cost of goods sold.

***12.** **(LO 6)** In a worksheet using a perpetual inventory system, Inventory is shown in the following columns:

**a.** adjusted trial balance debit and balance sheet debit.

**b.** income statement debit and balance sheet debit.

**c.** income statement credit and balance sheet debit.

**d.** income statement credit and adjusted trial balance debit.

***13.** **(LO 7)** In determining cost of goods sold in a periodic system:

**a.** purchase discounts are deducted from net purchases.

**b.** freight-out is added to net purchases.

**c.** purchase returns and allowances are deducted from net purchases.

**d.** freight-in is added to net purchases.

***14.** **(LO 7)** If beginning inventory is $60,000, cost of goods purchased is $380,000, and ending inventory is $50,000, cost of goods sold is:

**a.** $390,000. **c.** $330,000.

**b.** $370,000. **d.** $420,000.

***15.** **(LO 7)** When goods are purchased for resale by a company using a periodic inventory system:

**a.** purchases on account are debited to Inventory.

**b.** purchases on account are debited to Purchases.

**c.** purchase returns are debited to Purchase Returns and Allowances.

**d.** freight costs are debited to Purchases.

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### Solutions

**1. c.** Gross profit will result if net sales are greater than cost of goods sold. The other choices are incorrect because (a) operating expenses and net income are not used in the computation of gross profit; (b) gross profit results when net sales are greater than cost of goods sold, not operating expenses; and (d) gross profit results when net sales, not operating expenses, are greater than cost of goods sold.

**2. a.** Under a perpetual inventory system, when a company purchases goods for resale, purchases on account are debited to the Inventory account, not (b) Purchases or (c) Purchase Returns and Allowances. Choice (d) is incorrect because freight costs are also debited to the Inventory account, not the Freight-Out account.

**3. c.** Both Sales Discounts and Sales Returns and Allowances normally have a debit balance. Choices (a) and (b) are both correct, but (c) is the better answer. Choice (d) is incorrect as both (a) and (b) are correct.

**4. b.** The full amount of $686 is paid within 10 days of the purchase ($750 – $50) – [($750 – $50) × 2%]. The other choices are incorrect because (a) does not consider the discount of $14; (c) the amount of the discount is based upon the amount after the return is granted ($700 × 2%), not the amount before the return of merchandise ($750 × 2%); and (d) does not constitute payment in full on June 23.

**5. c.** The Cost of Goods Sold account normally appears in the ledger of a merchandising company using a perpetual inventory system. The other choices are incorrect because (a) the Purchases account, (b) the Freight-In account, and (d) the Purchase Discounts account all appear in the ledger of a merchandising company that uses a periodic inventory system.

**6. c.** Two journal entries are necessary: one to record the receipt of cash and sales revenue, and one to record the cost of goods sold and reduction of inventory. The other choices are incorrect because (a) only considers the recognition of the expense and ignores the revenue, (b) only considers the recognition of revenue and leaves out the expense or cost of merchandise sold, and (d) the receipt of cash and sales revenue, not reduction of inventory, are paired together, and the cost of goods sold and reduction of inventory, not sales revenue, are paired together.

**7. a.** An additional adjusting journal entry for inventory may be needed in a merchandising company to adjust for a physical inventory count, but it is not needed for a service company. The other choices are incorrect because (b) closing journal entries and (c) a post-closing trial balance are required for both types of companies. Choice (d) is incorrect because while a multiple-step income statement is not required for a merchandising company, it is useful to distinguish income generated from operating the business versus income or loss from non-recurring, nonoperating items.

**8. d.** An investing activities section appears on the statement of cash flows, not on a multiple-step income statement. Choices (a) gross profit, (b) cost of goods sold, and (c) a sales section are all features of a multiple-step income statement.

**9. b.** Gross profit = Net sales ($400,000) – Cost of goods sold ($310,000) = $90,000, not (a) $30,000, (c) $340,000, or (d) $400,000.

**10. c.** Both sales revenue and "Other revenues and gains" are reported in the revenues section of a single-step income statement. The other choices are incorrect because (a) gross profit is not reported on a single-step income statement, (b) cost of goods sold is included in the expenses section of a single-step income statement, and (d) income from operations is not shown separately on a single-step income statement.

**11. d.** Cost of goods sold appears on both a single-step and a multiple-step income statement. The other choices are incorrect because (a) inventory does not appear on either a single-step or a multiple-step income statement and (b) gross profit and (c) income from operations appear on a multiple-step income statement but not on a single-step income statement.

**12. a.** In a worksheet using a perpetual inventory system, inventory is shown in the adjusted trial balance debit column and in the balance sheet debit column. The other choices are incorrect because the Inventory account is not shown in the income statement columns.

***13. d.** In determining cost of goods sold in a periodic system, freight-in is added to net purchases. The other choices are incorrect because (a) purchase discounts are deducted from purchases, not net purchases; (b) freight-out is a cost of sales, not a cost of purchases; and (c) purchase returns and allowances are deducted from purchases, not net purchases.

***14. a.** Beginning inventory ($60,000) + Cost of goods purchased ($380,000) – Ending inventory ($50,000) = Cost of goods sold ($390,000), not (b) $370,000, (c) $330,000, or (d) $420,000.

***15. b.** Purchases for resale are debited to the Purchases account. The other choices are incorrect because (a) purchases on account are debited to Purchases, not Inventory; (c) Purchase Returns and Allowances are always credited; and (d) freight costs are debited to Freight-In, not Purchases.

## Practice Brief Exercises

*Compute the missing amounts in determining cost of goods sold.*

**1. (LO 1)** Presented below are the components in determining cost of goods sold for (a) Frazier Company, (b) Todd Company, and (c) Abreu Enterprises. Determine the missing amounts.

| | Beginning Inventory | Purchases | Cost of Goods Available for Sale | Ending Inventory | Cost of Goods Sold |
|---|---|---|---|---|---|
| **a.** | $120,000 | $150,000 | ? | ? | $160,000 |
| **b.** | $ 50,000 | ? | $125,000 | $45,000 | ? |
| **c.** | ? | $220,000 | $330,000 | $61,000 | ? |

### Solution

**1. a.** Cost of goods available for sale = $120,000 + $150,000 = $270,000

Ending inventory = $270,000 – $160,000 = $110,000

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**b.** Purchases = $125,000 – $50,000 = $75,000
Cost of goods sold = $125,000 – $45,000 = $80,000

**c.** Beginning inventory = $330,000 – $220,000 = $110,000
Cost of goods sold = $330,000 – $61,000 = $269,000

**2. (LO 2)** Prepare the journal entries to record the following transactions on Robertson Company's books using a perpetual inventory system. *Journalize purchase transactions.*

**a.** On March 2, Melky Company sold $800,000 of merchandise to Robertson Company, terms 2/10, n/30.

**b.** On March 6, Robertson Company returned $100,000 of the merchandise purchased on March 2.

**c.** On March 12, Robertson Company paid the balance due to Melky Company.

### Solution

| | | | |
|---|---|---|---|
| **2. a.** Inventory | | 800,000 | |
| Accounts Payable | | | 800,000 |
| **b.** Accounts Payable | | 100,000 | |
| Inventory | | | 100,000 |
| **c.** Accounts Payable ($800,000 – $100,000) | | 700,000 | |
| Inventory ($700,000 × 2%) | | | 14,000 |
| Cash ($700,000 – $14,000) | | | 686,000 |

**3. (LO 4)** Cabrera Company has the following account balances: Sales Revenue $300,000, Sales Returns and Allowances $10,000, Cost of Goods Sold $174,000, and Inventory $50,000. Prepare the entries to record the closing of these items to Income Summary. *Prepare closing entries.*

### Solution

| | | | |
|---|---|---|---|
| **3.** Sales Revenue | | 300,000 | |
| Income Summary | | | 300,000 |
| Income Summary | | 184,000 | |
| Cost of Goods Sold | | | 174,000 |
| Sales Returns and Allowances | | | 10,000 |

**4. (LO 5)** Assume Yoan Company has the following reported amounts: Sales revenue $400,000, Sales discounts $10,000, Cost of goods sold $234,000, and Operating expenses $60,000. Compute the following: (a) net sales, (b) gross profit, (c) income from operations, and (d) gross profit rate. (Round to one decimal place.) *Compute net sales, gross profit, income from operations, and gross profit rate.*

### Solution

**4. a.** Net sales = $400,000 – $10,000 = $390,000

**b.** Gross profit = $390,000 – $234,000 = $156,000

**c.** Income from operations = $156,000 – $60,000 = $96,000

**d.** Gross profit rate = $156,000 ÷ $390,000 = 40%

## Practice Exercises

**1. (LO 2, 3)** On June 10, Spinner Company purchased $10,000 of merchandise on account from Lawrence Company, FOB shipping point, terms 2/10, n/30. Spinner pays the freight costs of $600 on June 11. Damaged goods totaling $700 are returned to Lawrence for credit on June 12. The fair value of these goods is $300. On June 19, Spinner pays Lawrence in full, less the purchase discount. Both companies use a perpetual inventory system. *Prepare purchase and sales entries.*

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### Instructions

**a.** Prepare separate entries for each transaction on the books of Spinner Company.

**b.** Prepare separate entries for each transaction for Lawrence Company. The merchandise purchased by Spinner on June 10 had cost Lawrence $6,400.

### Solution

**1. a.**

| | | | | |
|---|---|---|---|---|
| June | 10 | Inventory | 10,000 | |
| | | Accounts Payable | | 10,000 |
| | 11 | Inventory | 600 | |
| | | Cash | | 600 |
| | 12 | Accounts Payable | 700 | |
| | | Inventory | | 700 |
| | 19 | Accounts Payable ($10,000 – $700) | 9,300 | |
| | | Inventory ($9,300 × 2%) | | 186 |
| | | Cash ($9,300 – $186) | | 9,114 |

**b.**

| | | | | |
|---|---|---|---|---|
| June | 10 | Accounts Receivable | 10,000 | |
| | | Sales Revenue | | 10,000 |
| | | Cost of Goods Sold | 6,400 | |
| | | Inventory | | 6,400 |
| | 12 | Sales Returns and Allowances | 700 | |
| | | Accounts Receivable | | 700 |
| | | Inventory | 300 | |
| | | Cost of Goods Sold | | 300 |
| | 19 | Cash ($9,300 – $186) | 9,114 | |
| | | Sales Discounts ($9,300 × 2%) | 186 | |
| | | Accounts Receivable ($10,000 – $700) | | 9,300 |

*Prepare multiple-step and single-step income statements.*

**2. (LO 5)** **Financial Statement** In its income statement for the year ended December 31, 2020, Sale Company reported the following condensed data.

| | | | |
|---|---|---|---|
| Interest expense | $ 50,000 | Net sales | $1,650,000 |
| Operating expenses | 590,000 | Interest revenue | 20,000 |
| Cost of goods sold | 902,000 | Loss on disposal of equipment | 7,000 |

### Instructions

**a.** Prepare a multiple-step income statement.

**b.** Prepare a single-step income statement.

### Solution

**2. a.**

**Sale Company**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | | |
|---|---|---|---|
| Net sales | | | $1,650,000 |
| Cost of goods sold | | | 902,000 |
| Gross profit | | | 748,000 |
| Operating expenses | | | 590,000 |
| Income from operations | | | 158,000 |
| Other revenues and gains | | | |
| Interest revenue | | $20,000 | |
| Other expenses and losses | | | |
| Interest expense | $50,000 | | |
| Loss on disposal of equipment | 7,000 | 57,000 | (37,000) |
| Net income | | | $ 121,000 |

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**b.**

| Sale Company<br>Income Statement<br>For the Year Ended December 31, 2020 | | |
|---|---|---|
| Revenues | | |
| Net sales | $1,650,000 | |
| Interest revenue | 20,000 | |
| Total revenues | | $1,670,000 |
| Expenses | | |
| Cost of goods sold | 902,000 | |
| Operating expenses | 590,000 | |
| Interest expenses | 50,000 | |
| Loss on sale of equipment | 7,000 | |
| Total expenses | | 1,549,000 |
| Net income | | $ 121,000 |

## Practice Problem

**(LO 5)** **Financial Statement** The adjusted trial balance columns of Falcetto Company's worksheet for the year ended December 31, 2020, are as follows.

*Prepare a multiple-step income statement.*

| | Debit | | Credit |
|---|---|---|---|
| Cash | 14,500 | Accumulated Depreciation—Equipment | 18,000 |
| Accounts Receivable | 11,100 | Notes Payable | 25,000 |
| Inventory | 29,000 | Accounts Payable | 10,600 |
| Prepaid Insurance | 2,500 | Owner's Capital | 81,000 |
| Equipment | 95,000 | Sales Revenue | 536,800 |
| Owner's Drawings | 12,000 | Interest Revenue | 2,500 |
| Sales Returns and Allowances | 6,700 | | 673,900 |
| Sales Discounts | 5,000 | | |
| Cost of Goods Sold | 363,400 | | |
| Freight-Out | 7,600 | | |
| Advertising Expense | 12,000 | | |
| Salaries and Wages Expense | 56,000 | | |
| Utilities Expense | 18,000 | | |
| Rent Expense | 24,000 | | |
| Depreciation Expense | 9,000 | | |
| Insurance Expense | 4,500 | | |
| Interest Expense | 3,600 | | |
| | 673,900 | | |

### Instructions

Prepare a multiple-step income statement for Falcetto Company.

### Solution

| Falcetto Company<br>Income Statement<br>For the Year Ended December 31, 2020 | | |
|---|---|---|
| Sales | | |
| Sales revenue | | $536,800 |
| Less: Sales returns and allowances | $ 6,700 | |
| Sales discounts | 5,000 | 11,700 |

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| | | |
|---|---|---|
| Net sales | | 525,100 |
| Cost of goods sold | | 363,400 |
| Gross profit | | 161,700 |
| Operating expenses | | |
| Salaries and wages expense | 56,000 | |
| Rent expense | 24,000 | |
| Utilities expense | 18,000 | |
| Advertising expense | 12,000 | |
| Depreciation expense | 9,000 | |
| Freight-out | 7,600 | |
| Insurance expense | 4,500 | |
| Total operating expenses | | 131,100 |
| Income from operations | | 30,600 |
| Other revenues and gains | | |
| Interest revenue | 2,500 | |
| Other expenses and losses | | |
| Interest expense | 3,600 | 1,100 |
| Net income | | $ 29,500 |

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendices to the chapter.

## Questions

**1.** (a) "The steps in the accounting cycle for a merchandising company are different from the accounting cycle for a service company." Do you agree or disagree? (b) Is the measurement of net income for a merchandising company conceptually the same as for a service company? Explain.

**2.** Why is the normal operating cycle for a merchandising company likely to be longer than for a service company?

**3.** What components of revenues and expenses are different between merchandising and service companies?

**4.** How does income measurement differ between a merchandising and a service company?

**5.** When is cost of goods sold determined in a perpetual inventory system?

**6.** Distinguish between FOB shipping point and FOB destination. Identify the freight terms that will result in a debit to Inventory by the buyer and a debit to Freight-Out by the seller.

**7.** Explain the meaning of the credit terms 2/10, n/30.

**8.** Goods costing $2,000 are purchased on account on July 15 with credit terms of 2/10, n/30. On July 18, a $200 credit memo is received from the supplier for damaged goods. Give the journal entry on July 24 to record payment of the balance due within the discount period using a perpetual inventory system.

**9.** Celina Harris believes revenues from credit sales may be recorded before they are collected in cash. Do you agree? Explain.

**10.** (a) What is the primary source document for recording (1) cash sales and (2) credit sales? (b) Using XXs for amounts, give the journal entry for each of the transactions in part (a).

**11.** A credit sale is made on July 10 for $900, terms 2/10, n/30. On July 12, $100 of goods are returned for credit. Give the journal entry on July 19 to record the receipt of the balance due within the discount period.

**12.** Explain why the Inventory account will usually require adjustment at year-end.

**13.** Prepare the closing entries for the Sales Revenue account, assuming a balance of $200,000 and the Cost of Goods Sold account with a $145,000 balance.

**14.** What merchandising account(s) will appear in the post-closing trial balance?

**15.** Cupery Co. has net sales of $105,000, cost of goods sold of $70,000, and operating expenses of $20,000. What is its gross profit and its gross profit rate?

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**16.** Stefan Page Company reports net sales of $800,000, gross profit of $370,000, and net income of $240,000. What are its operating expenses?

**17.** Identify the distinguishing features of an income statement for a merchandising company.

**18.** Identify the sections of a multiple-step income statement that relate to (a) operating activities, and (b) nonoperating activities.

**19.** How does the single-step form of income statement differ from the multiple-step form?

**20.** Determine **Apple**'s gross profit rate for 2015 and 2014. Indicate whether it increased or decreased from 2014 to 2015.

***21.** Indicate the columns of the worksheet in a perpetual system in which (a) inventory and (b) cost of goods sold will be shown.

***22.** Identify the accounts that are added to or deducted from Purchases in a periodic system to determine the cost of goods purchased. For each account, indicate whether it is added or deducted.

***23.** Goods costing $3,000 are purchased on account on July 15 with credit terms of 2/10, n/30. On July 18, a $200 credit was received from the supplier for damaged goods. Give the journal entry on July 24 to record payment of the balance due within the discount period, assuming a periodic inventory system.

## Brief Exercises

**BE5.1 (LO 1)** Presented below are the components in determining cost of goods sold. Determine the missing amounts.

*Compute missing amounts in determining cost of goods sold.*

| | Beginning Inventory | Purchases | Cost of Goods Available for Sale | Ending Inventory | Cost of Goods Sold |
|---|---|---|---|---|---|
| **a.** | $80,000 | $100,000 | ? | ? | $120,000 |
| **b.** | $50,000 | ? | $115,000 | $35,000 | ? |
| **c.** | ? | $110,000 | $160,000 | $29,000 | ? |

**BE5.2 (LO 1)** Presented below are the components in Veasy Company's income statement. Determine the missing amounts.

*Compute missing amounts in determining net income.*

| | Sales Revenue | Cost of Goods Sold | Gross Profit | Operating Expenses | Net Income |
|---|---|---|---|---|---|
| **a.** | $ 75,000 | ? | $28,000 | ? | $ 9,800 |
| **b.** | $108,000 | $70,000 | ? | ? | $29,500 |
| **c.** | ? | $83,900 | $79,600 | $39,500 | ? |

**BE5.3 (LO 2, 3)** Cha Company buys merchandise on account from Wirtz Company. The selling price of the goods is $780, and the cost of the goods is $470. Both companies use perpetual inventory systems. Journalize the transaction on the books of both companies.

*Journalize perpetual inventory entries.*

**BE5.4 (LO 3)** Prepare the journal entries to record the following transactions on Novy Company's books using a perpetual inventory system.

*Journalize sales transactions.*

**a.** On March 2, Novy Company sold $900,000 of merchandise on account to Opps Company, terms 2/10, n/30. The cost of the merchandise sold was $590,000.

**b.** On March 6, Opps Company returned $90,000 of the merchandise purchased on March 2. The cost of the returned merchandise was $62,000.

**c.** On March 12, Novy Company received the balance due from Opps Company.

**BE5.5 (LO 2)** From the information in BE5.4, prepare the journal entries to record these transactions on Opps Company's books under a perpetual inventory system.

*Journalize purchase transactions.*

**BE5.6 (LO 4)** At year-end, the perpetual inventory records of Gutierrez Company showed merchandise inventory of $98,000. The company determined, however, that its actual inventory on hand was $96,100. Record the necessary adjusting entry.

*Prepare adjusting entry for inventory.*

**BE5.7 (LO 4)** Brueser Company has the following account balances: Sales Revenue $195,000, Sales Discounts $2,000, Cost of Goods Sold $117,000, and Inventory $40,000. Prepare the entries to record the closing of these items to Income Summary.

*Prepare closing entries for accounts.*

**BE5.8 (LO 5)** **Financial Statement** Nelson Company provides the following information for the month ended October 31, 2020: sales on credit $280,000, cash sales $95,000, sales discounts $5,000, and sales returns and allowances $11,000. Prepare the sales section of the income statement based on this information.

*Prepare sales section of income statement.*

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*Contrast presentation in multiple-step and single-step income statements.*

**BE5.9 (LO 5)** Writing Financial Statement Explain where each of the following items would appear on (1) a multiple-step income statement, and on (2) a single-step income statement: (a) gain on sale of equipment, (b) interest expense, (c) casualty loss from vandalism, and (d) cost of goods sold.

*Compute net sales, gross profit, income from operations, and gross profit rate.*

**BE5.10 (LO 5)** Assume Kupfer Company has the following reported amounts: Sales revenue $510,000, Sales returns and allowances $15,000, Cost of goods sold $330,000, and Operating expenses $90,000. Compute the following: (a) net sales, (b) gross profit, (c) income from operations, and (d) gross profit rate. (Round to one decimal place.)

*Identify worksheet columns for selected accounts.*

***BE5.11 (LO 6)** Presented below is the format of the worksheet using the perpetual inventory system presented in Appendix 5A.

| Trial Balance | | Adjustments | | Adjusted Trial Balance | | Income Statement | | Balance Sheet | |
|---|---|---|---|---|---|---|---|---|---|
| Dr. | Cr. | Dr. | Cr. | Dr. | Cr. | Dr. | Cr. | Dr. | Cr. |

Indicate where the following items will appear on the worksheet: (a) Cash, (b) Inventory, (c) Sales revenue, and (d) Cost of goods sold.

*Example:*

Cash: Trial balance debit column; Adjusted trial balance debit column; and Balance sheet debit column.

*Compute net purchases and cost of goods purchased.*

***BE5.12 (LO 7)** Assume that Morgan Company uses a periodic inventory system and has these account balances: Purchases $450,000, Purchase Returns and Allowances $13,000, Purchase Discounts $9,000, and Freight-In $18,000. Determine net purchases and cost of goods purchased.

*Compute cost of goods sold and gross profit.*

***BE5.13 (LO 7)** Assume the same information as in BE5.12 and also that Morgan Company has beginning inventory of $60,000, ending inventory of $90,000, and net sales of $730,000. Determine the amounts to be reported for cost of goods sold and gross profit.

*Journalize purchase transactions.*

***BE5.14 (LO 7)** Prepare the journal entries to record these transactions on Shabani Company's books using a periodic inventory system.

**a.** On March 2, Shabani Company purchased $900,000 of merchandise on account from Ballas Company, terms 2/10, n/30.

**b.** On March 6, Shabani Company returned $110,000 of the merchandise purchased on March 2.

**c.** On March 12, Shabani Company paid the balance due to Ballas Company.

*Prepare closing entries for merchandise accounts.*

***BE5.15 (LO 7)** T. Corlett Company has the following merchandise account balances: Sales Revenue $180,000, Sales Discounts $2,000, Purchases $120,000, and Purchases Returns and Allowances $30,000. In addition, it has a beginning inventory of $40,000 and an ending inventory of $30,000. Prepare the entries to record the closing of these items to Income Summary using the periodic inventory system.

*Identify worksheet columns for selected accounts*

***BE5.16 (LO 7)** Presented below is the format of the worksheet using the periodic inventory system presented in Appendix 5B.

| Trial Balance | | Adjustments | | Adjusted Trial Balance | | Income Statement | | Balance Sheet | |
|---|---|---|---|---|---|---|---|---|---|
| Dr. | Cr. | Dr. | Cr. | Dr. | Cr. | Dr. | Cr. | Dr. | Cr. |

Indicate where the following items will appear on the worksheet: (a) Cash, (b) Beginning inventory, (c) Accounts payable, and (d) Ending inventory.

*Example*

Cash: Trial balance debit column; Adjustment trial balance debit column; and Balance sheet debit column.

## DO IT! Exercises

*Answer general questions about merchandisers.*

**DO IT! 5.1 (LO 1)** Indicate whether the following statements are true or false. If false, indicate how to correct the statement.

**1.** A merchandising company reports gross profit but a service company does not.

**2.** Under a periodic inventory system, a company determines the cost of goods sold each time a sale occurs.

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3. A service company is likely to use accounts receivable but a merchandising company is not likely to do so.
4. Under a periodic inventory system, the cost of goods on hand at the beginning of the accounting period plus the cost of goods purchased less the cost of goods on hand at the end of the accounting period equals cost of goods sold.

*Record transactions of purchasing company.*

**DO IT! 5.2 (LO 2)** On October 5, Wang Company buys merchandise on account from Davis Company. The selling price of the goods is $4,800, and the cost to Davis Company is $3,100. On October 8, Wang returns defective goods with a selling price of $650 and a fair value of $100. Record the transactions on the books of Wang Company.

*Record transactions of selling company.*

**DO IT! 5.3 (LO 3)** Assume information similar to that in **DO IT! 5.2**. On October 5, Wang Company buys merchandise on account from Davis Company. The selling price of the goods is $4,800, and the cost to Davis Company is $3,100. On October 8, Wang returns defective goods with a selling price of $650 and a fair value of $100. Record the transactions on the books of Davis Company.

*Prepare closing entries for a merchandising company.*

**DO IT! 5.4 (LO 4)** The trial balance of Beads and Bangles at December 31 shows Inventory $21,000, Sales Revenue $156,000, Sales Returns and Allowances $4,000, Sales Discounts $3,000, Cost of Goods Sold $92,400, Interest Revenue $5,000, Freight-Out $1,800, Utilities Expense $7,700, and Salaries and Wages Expense $19,500. Prepare the closing entries for Beads and Bangles for these accounts.

*Prepare a multiple-step income statement and comprehensive income statement.*

**DO IT! 5.5 (LO 5)** **Financial Statement** The following information is available for Berlin Corp. for the year ended -December 31, 2020:

| | | | |
|---|---|---|---|
| Other revenues and gains | $ 12,700 | Sales revenue | $592,000 |
| Other expenses and losses | 13,300 | Operating expenses | 186,000 |
| Cost of goods sold | 156,000 | Sales returns and allowances | 40,000 |
| Other comprehensive income | 5,400 | | |

Prepare a multiple-step income statement for Berlin Corp. and a comprehensive income statement.

## Exercises

*Answer general questions about merchandisers.*

**E5.1 (LO 1)** Mr. McKenzie has prepared the following list of statements about service companies and merchandisers.

1. Measuring net income for a merchandiser is conceptually the same as for a service company.
2. For a merchandiser, sales less operating expenses is called gross profit.
3. For a merchandiser, the primary source of revenues is the sale of inventory.
4. Sales salaries and wages is an example of an operating expense.
5. The operating cycle of a merchandiser is the same as that of a service company.
6. In a perpetual inventory system, no detailed inventory records of goods on hand are maintained.
7. In a periodic inventory system, the cost of goods sold is determined only at the end of the accounting period.
8. A periodic inventory system provides better control over inventories than a perpetual system.

### Instructions

Identify each statement as true or false. If false, indicate how to correct the statement.

*Journalize purchase transactions.*

**E5.2 (LO 2)** Information related to Kerber Co. is presented below.

1. On April 5, purchased merchandise on account from Wilkes Company for $23,000, terms 2/10, net/30, FOB shipping point.
2. On April 6, paid freight costs of $900 on merchandise purchased from Wilkes.
3. On April 7, purchased equipment on account for $26,000.
4. On April 8, returned damaged merchandise to Wilkes Company and was granted a $3,000 credit for returned merchandise.
5. On April 15, paid the amount due to Wilkes Company in full.

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**Instructions**

**a.** Prepare the journal entries to record these transactions on the books of Kerber Co. under a perpetual inventory system.

**b.** Assume that Kerber Co. paid the balance due to Wilkes Company on May 4 instead of April 15. Prepare the journal entry to record this payment.

*Journalize perpetual inventory entries.*

**E5.3 (LO 2, 3)** On September 1, Nixa Office Supply had an inventory of 30 calculators at a cost of $18 each. The company uses a perpetual inventory system. During September, the following transactions occurred.

| | | |
|---|---|---|
| Sept. | 6 | Purchased 90 calculators at $22 each from York. |
| | 9 | Paid freight of $90 on calculators purchased from York Co. |
| | 10 | Returned 3 calculators to York Co. for $69 cash (including freight) because they did not meet specifications. |
| | 12 | Sold 26 calculators costing $23 (including freight) for $31 each on account to Sura Book Store, terms n/30. |
| | 14 | Granted credit of $31 to Sura Book Store for the return of one calculator that was not ordered. |
| | 20 | Sold 30 calculators costing $23 for $32 each on account to Davis Card Shop, terms n/30. |

**Instructions**

Journalize the September transactions.

*Prepare purchase and sales entries.*

**E5.4 (LO 2, 3)** On June 10, Diaz Company purchased $8,000 of merchandise on account from Taylor Company, FOB shipping point, terms 2/10, n/30. Diaz pays the freight costs of $400 on June 11. Damaged goods totaling $300 are returned to Taylor for credit on June 12. The fair value of these goods is $70. On June 19, Diaz pays Taylor Company in full, less the purchase discount. Both companies use a perpetual inventory system.

**Instructions**

**a.** Prepare separate entries for each transaction on the books of Diaz Company.

**b.** Prepare separate entries for each transaction for Taylor Company. The merchandise purchased by Diaz on June 10 had cost Taylor $4,800.

*Journalize sales transactions.*

**E5.5 (LO 3)** Presented below are transactions related to R. Humphrey Company.

**1.** On December 3, R. Humphrey Company sold $570,000 of merchandise on account to Frazier Co., terms 1/10, n/30, FOB destination. R. Humphrey paid $400 for freight charges. The cost of the merchandise sold was $350,000.

**2.** On December 8, Frazier Co. was granted an allowance of $20,000 for merchandise purchased on December 3.

**3.** On December 13, R. Humphrey Company received the balance due from Frazier Co.

**Instructions**

**a.** Prepare the journal entries to record these transactions on the books of R. Humphrey Company using a perpetual inventory system.

**b.** Assume that R. Humphrey Company received the balance due from Frazier Co. on January 2 of the following year instead of December 13. Prepare the journal entry to record the receipt of payment on January 2.

*Prepare sales section and closing entries.*

**E5.6 (LO 4, 5)** **Financial Statement** The adjusted trial balance of Sang Company shows the following data pertaining to sales at the end of its fiscal year October 31, 2020: Sales Revenue $820,000, Freight-Out $16,000, Sales Returns and Allowances $25,000, and Sales Discounts $13,000.

**Instructions**

**a.** Prepare the sales section of the income statement.

**b.** Prepare separate closing entries for (1) sales revenue, and (2) the contra accounts to sales revenue.

*Prepare adjusting and closing entries.*

**E5.7 (LO 4)** Tim Jarosz Company had the following account balances at year-end: Cost of Goods Sold $60,000, Inventory $15,000, Operating Expenses $29,000, Sales Revenue $115,000, Sales Discounts

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$1,200, and Sales Returns and Allowances $1,700. A physical count of inventory determines that merchandise inventory on hand is $13,600.

### Instructions

**a.** Prepare the adjusting entry necessary as a result of the physical count.

**b.** Prepare closing entries.

**E5.8 (LO 4)** Presented below is information related to Hoerl Co. for the month of January 2020. *Prepare adjusting and closing entries.*

| | | | |
|---|---|---|---|
| Ending inventory per perpetual records | $ 21,600 | Insurance expense | $ 12,000 |
| Ending inventory actually on hand | 21,000 | Rent expense | 20,000 |
| Cost of goods sold | 218,000 | Salaries and wages expense | 55,000 |
| Freight-out | 7,000 | Sales discounts | 10,000 |
| | | Sales returns and allowances | 13,000 |
| | | Sales revenue | 380,000 |

### Instructions

**a.** Prepare the necessary adjusting entry for inventory.

**b.** Prepare the necessary closing entries.

**E5.9 (LO 5)** **Financial Statement** Presented below is information for Kaila Company for the month of March 2020. *Prepare a multiple-step income statement and calculate profitability.*

| | | | |
|---|---|---|---|
| Cost of goods sold | $215,000 | Rent expense | $ 30,000 |
| Freight-out | 7,000 | Sales discounts | 8,000 |
| Insurance expense | 6,000 | Sales returns and allowances | 13,000 |
| Salaries and wages expense | 58,000 | Sales revenue | 380,000 |

### Instructions

**a.** Prepare a multiple-step income statement.

**b.** Compute the gross profit rate.

**E5.10 (LO 5)** **Financial Statement** In its income statement for the year ended December 31, 2020, Anhad Company reported the following condensed data. *Prepare income statements and a comprehensive income statement.*

Excel

| | | | |
|---|---|---|---|
| Operating expenses | $ 725,000 | Interest revenue | $ 28,000 |
| Cost of goods sold | 1,289,000 | Loss on disposal of plant assets | 17,000 |
| Interest expense | 70,000 | Net sales | 2,200,000 |
| | | Other comprehensive loss | 8,300 |

### Instructions

**a.** Prepare a multiple-step income statement.

**b.** Prepare a single-step income statement.

**c.** Prepare a comprehensive income statement.

**E5.11 (LO 2, 3)** An inexperienced accountant for Stahr Company made the following errors in recording merchandising transactions. *Prepare correcting entries for sales and purchases.*

1. A $210 refund to a customer for faulty merchandise was debited to Sales Revenue $210 and credited to Cash $210.
2. A $180 credit purchase of supplies was debited to Inventory $180 and credited to Cash $180.
3. A $215 sales discount was debited to Sales Revenue.
4. A cash payment of $20 for freight on merchandise purchases was debited to Freight-Out $200 and credited to Cash $200.

### Instructions

Prepare separate correcting entries for each error, assuming that the incorrect entry is not reversed. (Omit explanations.)

**E5.12 (LO 5)** **Financial Statement** In 2020, Laquen Company had net sales of $900,000 and cost of goods sold of $522,000. Operating expenses were $225,000, and interest expense was $11,000. Laquen prepares a multiple-step income statement. *Compute various income measures.*

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**Instructions**

**a.** Compute Laquen's gross profit.

**b.** Compute the gross profit rate. Why is this rate computed by financial statement users?

**c.** What is Laquen's income from operations and net income?

**d.** If Laquen prepared a single-step income statement, what amount would it report for net income?

**e.** In what section of its classified balance sheet should Laquen report inventory?

*Compute missing amounts and compute gross profit rate.*

**E5.13 (LO 5)** Presented below is financial information for two different companies.

| | Summer Company | Winter Company |
|---|---|---|
| Sales revenue | $92,000 | (d) |
| Sales returns | (a) | $ 5,000 |
| Net sales | 87,000 | 102,000 |
| Cost of goods sold | 56,000 | (e) |
| Gross profit | (b) | 41,500 |
| Operating expenses | 15,000 | (f) |
| Net income | (c) | 18,000 |

**Instructions**

**a.** Determine the missing amounts.

**b.** Determine the gross profit rates. (Round to one decimal place.)

*Compute missing amounts.*

**E5.14 (LO 5)** Financial information is presented below for three different companies.

| | Hardy Cosmetics | Yee Grocery | Wang Wholesalers |
|---|---|---|---|
| Sales revenue | $90,000 | $ (e) | $122,000 |
| Sales returns and allowances | (a) | 5,000 | 12,000 |
| Net sales | 86,000 | 95,000 | (i) |
| Cost of goods sold | 56,000 | (f) | (j) |
| Gross profit | (b) | 38,000 | 24,000 |
| Operating expenses | 15,000 | (g) | 18,000 |
| Income from operations | (c) | (h) | (k) |
| Other expenses and losses | 4,000 | 7,000 | (l) |
| Net income | (d) | 11,000 | 5,000 |

**Instructions**

Determine the missing amounts.

*Complete worksheet using a perpetual inventory system.*

***E5.15 (LO 6)** The following are selected accounts for McPhan Company as reported in the worksheet using a perpetual inventory system at the end of May 2020.

| Accounts | Adjusted Trial Balance | | Income Statement | | Balance Sheet | |
|---|---|---|---|---|---|---|
| | Dr. | Cr. | Dr. | Cr. | Dr. | Cr. |
| Cash | 11,000 | | | | | |
| Inventory | 76,000 | | | | | |
| Sales Revenue | | 480,000 | | | | |
| Sales Returns and Allowances | 10,000 | | | | | |
| Sales Discounts | 9,000 | | | | | |
| Cost of Goods Sold | 300,000 | | | | | |

**Instructions**

Complete the worksheet by extending amounts reported in the adjusted trial balance to the appropriate columns in the worksheet. Do not total individual columns.

*Prepare a worksheet using a perpetual inventory system.*

***E5.16 (LO 6)** The trial balance columns of the worksheet using a perpetual inventory system for Balistreri Company at June 30, 2020, are as follows.

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**Balistreri Company**
**Worksheet**
**For the Month Ended June 30, 2020**

| Account Titles | Trial Balance Debit | Trial Balance Credit |
|---|---|---|
| Cash | 1,920 | |
| Accounts Receivable | 2,440 | |
| Inventory | 11,640 | |
| Accounts Payable | | 1,120 |
| Owner's Capital | | 3,500 |
| Sales Revenue | | 42,500 |
| Cost of Goods Sold | 20,560 | |
| Operating Expenses | 10,560 | |
| | 47,120 | 47,120 |

Other data:

Operating expenses incurred on account, but not yet recorded, total $1,500.

### Instructions

Enter the trial balance on a worksheet and complete the worksheet.

***E5.17 (LO 7)** The trial balance of A. Wiencek Company at the end of its fiscal year, August 31, 2020, includes these accounts: Inventory $19,500; Purchases $149,000; Sales Revenue $190,000; Freight-In $5,000; Sales Returns and Allowances $3,000; Freight-Out $1,000; and Purchase Returns and Allowances $2,000. The ending inventory is $23,000. *Prepare cost of goods sold section.*

### Instructions

Prepare a cost of goods sold section for the year ending August 31 (periodic inventory).

***E5.18 (LO 7)** On January 1, 2020, Brooke Hanson Corporation had inventory of $50,000. At December 31, 2020, Brooke Hanson had the following account balances. *Compute various income statement items.*

| | |
|---|---|
| Freight-in | $ 4,000 |
| Purchases | 509,000 |
| Purchase discounts | 6,000 |
| Purchase returns and allowances | 2,000 |
| Sales revenue | 840,000 |
| Sales discounts | 5,000 |
| Sales returns and allowances | 10,000 |

At December 31, 2020, Brooke Hanson determines that its ending inventory is $60,000.

### Instructions

**a.** Compute Brooke Hanson's 2020 gross profit.

**b.** Compute Brooke Hanson's 2020 operating expenses if net income is $130,000 and there are no nonoperating activities.

***E5.19 (LO 7)** Below is a series of cost of goods sold sections for companies B, F, L, and R. *Prepare cost of goods sold section.*

| | B | F | L | R |
|---|---|---|---|---|
| Beginning inventory | $ 180 | $ 70 | $1,000 | $ (j) |
| Purchases | 1,620 | 1,060 | (g) | 43,590 |
| Purchase returns and allowances | 40 | (d) | 290 | (k) |
| Net purchases | (a) | 1,030 | 6,210 | 41,090 |
| Freight-in | 110 | (e) | (h) | 2,240 |
| Cost of goods purchased | (b) | 1,280 | 7,940 | (l) |
| Cost of goods available for sale | 1,870 | 1,350 | (i) | 49,530 |
| Ending inventory | 250 | (f) | 1,450 | 6,230 |
| Cost of goods sold | (c) | 1,230 | 7,490 | 43,300 |

### Instruction

Fill in the lettered blanks to complete the cost of goods sold sections.

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*Journalize purchase transactions.*

***E5.20 (LO 7)** This information relates to Nandi Co.

1. On April 5, purchased merchandise on account from Dion Company for $25,000, terms 2/10, net/30, FOB shipping point.
2. On April 6, paid freight costs of $900 on merchandise purchased from Dion Company.
3. On April 7, purchased equipment on account for $30,000.
4. On April 8, returned some of April 5 merchandise, which cost $2,800, to Dion Company.
5. On April 15, paid the amount due to Dion Company in full.

**Instructions**

**a.** Prepare the journal entries to record these transactions on the books of Nandi Co. using a periodic inventory system.

**b.** Assume that Nandi Co. paid the balance due to Dion Company on May 4 instead of April 15. Prepare the journal entry to record this payment.

*Journalize purchase transactions.*

***E5.21 (LO 7)** Presented below is information related to Chung Co.

1. On April 5, purchased merchandise on account from Jose Company for $21,000, terms 2/10, net/30, FOB shipping point.
2. On April 6, paid freight costs of $800 on merchandise purchased from Jose.
3. On April 7, purchased equipment on account from Winker Mfg. Co. for $26,000.
4. On April 8, returned merchandise, which cost $4,000, to Jose Company.
5. On April 15, paid the amount due to Jose Company in full.

**Instructions**

**a.** Prepare the journal entries to record these transactions on the books of Chung Co. using a periodic inventory system.

**b.** Assume that Chung Co. paid the balance due to Jose Company on May 4 instead of April 15. Prepare the journal entry to record this payment.

*Complete worksheet for selected accounts.*

***E5.22 (LO 7)** Presented below are selected accounts for T. Swift Company as reported in the worksheet at the end of May 2020. Ending inventory is $75,000.

| Accounts | Adjusted Trial Balance | | Income Statement | | Balance Sheet | |
|---|---|---|---|---|---|---|
| | Dr. | Cr. | Dr. | Cr. | Dr. | Cr. |
| Cash | 9,000 | | | | | |
| Inventory | 80,000 | | | | | |
| Purchases | 240,000 | | | | | |
| Purchase Returns and Allowances | | 30,000 | | | | |
| Sales Revenue | | 450,000 | | | | |
| Sales Returns and Allowances | 10,000 | | | | | |
| Sales Discounts | 5,000 | | | | | |
| Rent Expense | 42,000 | | | | | |

**Instructions**

Complete the worksheet by extending amounts reported in the adjustment trial balance to the appropriate columns in the worksheet. The company uses the periodic inventory system.

## Problems: Set A

*Journalize purchase and sales transactions under a perpetual inventory system.*

Excel

**P5.1A (LO 2, 3)** Kern's Book Warehouse distributes hardcover books to retail stores and extends credit terms of 2/10, n/30 to all of its customers. At the end of May, Kern's inventory consisted of books purchased for $1,800. During June, the following merchandising transactions occurred.

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June 1 Purchased books on account for $1,600 from Binsfeld Publishers, FOB destination, terms 2/10, n/30. The appropriate party also made a cash payment of $50 for the freight on this date.
3 Sold books on account to Reading Rainbow for $2,500. The cost of the books sold was $1,440.
6 Received $100 credit for books returned to Binsfeld Publishers.
9 Paid Binsfeld Publishers in full, less discount.
15 Received payment in full from Reading Rainbow.
17 Sold books on account to Rapp Books for $1,800. The cost of the books sold was $1,080.
20 Purchased books on account for $1,800 from McGinn Publishers, FOB destination, terms 2/15, n/30. The appropriate party also made a cash payment of $60 for the freight on this date.
24 Received payment in full from Rapp Books.
26 Paid McGinn Publishers in full, less discount.
28 Sold books on account to Baeten Bookstore for $1,600. The cost of the books sold was $970.
30 Granted Baeten Bookstore $120 credit for books returned costing $72.

Kern's Book Warehouse's chart of accounts includes the following: No. 101 Cash, No. 112 Accounts Receivable, No. 120 Inventory, No. 201 Accounts Payable, No. 401 Sales Revenue, No. 412 Sales Returns and Allowances, No. 414 Sales Discounts, and No. 505 Cost of Goods Sold.

### Instructions

Journalize the transactions for the month of June for Kern's Book Warehouse using a perpetual inventory system.

**P5.2A (LO 2, 3, 5) Financial Statement** Renner Hardware Store completed the following merchandising transactions in the month of May. At the beginning of May, the ledger of Renner showed Cash of $5,000 and Owner's Capital of $5,000.

*Journalize, post, and prepare a partial income statement.*

GLS

May 1 Purchased merchandise on account from Braun's Wholesale Supply $4,200, terms 2/10, n/30.
2 Sold merchandise on account $2,100, terms 1/10, n/30. The cost of the merchandise sold was $1,300.
5 Received credit from Braun's Wholesale Supply for merchandise returned $300.
9 Received collections in full, less discounts, from customers billed on sales of $2,100 on May 2.
10 Paid Braun's Wholesale Supply in full, less discount.
11 Purchased supplies for cash $400.
12 Purchased merchandise for cash $1,400.
15 Received refund for poor quality merchandise from supplier on cash purchase $150.
17 Purchased merchandise from Valley Distributors $1,300, FOB shipping point, terms 2/10, n/30.
19 Paid freight on May 17 purchase $130.
24 Sold merchandise for cash $3,200. The merchandise sold had a cost of $2,000.
25 Purchased merchandise on account from Lumley, Inc. $620, FOB destination, terms 2/10, n/30.
27 Paid Valley Distributors in full, less discount.
29 Made refunds to cash customers for defective merchandise $70. The returned merchandise had a fair value of $30.
31 Sold merchandise on account $1,000 terms n/30. The cost of the merchandise sold was $560.

Renner Hardware's chart of accounts includes the following: No. 101 Cash, No. 112 Accounts Receivable, No. 120 Inventory, No. 126 Supplies, No. 201 Accounts Payable, No. 301 Owner's Capital, No. 401 Sales Revenue, No. 412 Sales Returns and Allowances, No. 414 Sales Discounts, and No. 505 Cost of Goods Sold.

### Instructions

**a.** Journalize the transactions using a perpetual inventory system.

**b.** Enter the beginning cash and capital balances and post the transactions. (Use J1 for the journal reference.)

**c.** Prepare an income statement through gross profit for the month of May 2020.

c. Gross profit $2,379

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*Prepare financial statements and adjusting and closing entries.*

**P5.3A (LO 4, 5)** **Financial Statement** Big Box Store is located in midtown Madison. During the past several years, net income has been declining because of suburban shopping centers. At the end of the company's fiscal year on November 30, 2020, the following accounts appeared in two of its trial balances.

| | Unadjusted | Adjusted | | Unadjusted | Adjusted |
|---|---|---|---|---|---|
| Accounts Payable | $ 25,200 | $ 25,200 | Notes Payable | $ 37,000 | $ 37,000 |
| Accounts Receivable | 30,500 | 30,500 | Owner's Capital | 101,700 | 101,700 |
| Accumulated Depr.—Equip. | 34,000 | 45,000 | Owner's Drawings | 10,000 | 10,000 |
| Cash | 26,000 | 26,000 | Prepaid Insurance | 10,500 | 3,500 |
| Cost of Goods Sold | 518,000 | 518,000 | Property Tax Expense | | 2,500 |
| Freight-Out | 6,500 | 6,500 | Property Taxes Payable | | 2,500 |
| Equipment | 146,000 | 146,000 | Rent Expense | 15,000 | 15,000 |
| Depreciation Expense | | 11,000 | Salaries and Wages Expense | 96,000 | 96,000 |
| Insurance Expense | | 7,000 | Sales Revenue | 720,000 | 720,000 |
| Interest Expense | 6,400 | 6,400 | Sales Commissions Expense | 6,500 | 11,000 |
| Interest Revenue | 2,000 | 2,000 | Sales Commissions Payable | | 4,500 |
| Inventory | 32,000 | 32,000 | Sales Returns and Allowances | 8,000 | 8,000 |
| | | | Utilities Expense | 8,500 | 8,500 |

**Instructions**

a. Net income $32,100
Owner's capital $123,800
Total assets $193,000

**a.** Prepare a multiple-step income statement, an owner's equity statement, and a classified balance sheet. Notes payable are due in 2023.

**b.** Journalize the adjusting entries that were made.

**c.** Journalize the closing entries that are necessary.

*Journalize, post, and prepare a trial balance.*

GLS

**P5.4A (LO 2, 3, 4)** **Financial Statement** Yolanda Hagen, a former disc golf star, operates Yolanda's Discorama. At the beginning of the current season on April 1, the ledger of Yolanda's Discorama showed Cash $1,800, Inventory $2,500, and Owner's Capital $4,300. The following transactions were completed during April.

Apr. 5 Purchased golf discs, bags, and other inventory on account from Mumford Co. $1,200, FOB shipping point, terms 2/10, n/60.
7 Paid freight on the Mumford purchase $50.
9 Received credit from Mumford Co. for merchandise returned $100.
10 Sold merchandise on account for $900, terms n/30. The merchandise sold had a cost of $540.
12 Purchased disc golf shirts and other accessories on account from Saucer Sportswear $670, terms 1/10, n/30.
14 Paid Mumford Co. in full, less discount.
17 Received credit from Saucer Sportswear for merchandise returned $70.
20 Made sales on account for $610, terms n/30. The cost of the merchandise sold was $370.
21 Paid Saucer Sportswear in full, less discount.
27 Granted an allowance to customers for clothing that was flawed $20.
30 Received payments on account from customers $900.

The chart of accounts for the store includes the following: No. 101 Cash, No. 112 Accounts Receivable, No. 120 Inventory, No. 201 Accounts Payable, No. 301 Owner's Capital, No. 401 Sales Revenue, No. 412 Sales Returns and Allowances, and No. 505 Cost of Goods Sold.

**Instructions**

**a.** Journalize the April transactions using a perpetual inventory system.

**b.** Enter the beginning balances in the ledger accounts and post the April transactions. (Use J1 for the journal reference.)

c. Total debits $5,810

**c.** Prepare a trial balance on April 30, 2020.

*Complete accounting cycle beginning with a worksheet.*

Excel

**P5.5A (LO 4, 5, 6)** **Financial Statement** The trial balance of Gaolee Fashion Center contained the following accounts at November 30, the end of the company's fiscal year.

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**Gaolee Fashion Center**
**Trial Balance**
**November 30, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $ 20,700 | |
| Accounts Receivable | 30,700 | |
| Inventory | 44,700 | |
| Supplies | 6,200 | |
| Equipment | 133,000 | |
| Accumulated Depreciation—Equipment | | $ 28,000 |
| Notes Payable | | 60,000 |
| Accounts Payable | | 48,500 |
| Owner's Capital | | 93,000 |
| Owner's Drawings | 12,000 | |
| Sales Revenue | | 755,200 |
| Sales Returns and Allowances | 8,800 | |
| Cost of Goods Sold | 497,400 | |
| Salaries and Wages Expense | 140,000 | |
| Advertising Expense | 24,400 | |
| Utilities Expense | 14,000 | |
| Maintenance and Repairs Expense | 12,100 | |
| Freight-Out | 16,700 | |
| Rent Expense | 24,000 | |
| Totals | $984,700 | $984,700 |

Adjustment data:

1. Supplies on hand totaled $2,600.
2. Depreciation is $11,500 on the equipment.
3. Interest of $3,800 is accrued on notes payable at November 30.
4. Inventory actually on hand is $44,400.

### Instructions

a. Enter the trial balance on a worksheet, and complete the worksheet.

b. Prepare a multiple-step income statement and an owner's equity statement for the year, and a classified balance sheet as of November 30, 2020. Notes payable of $20,000 are due in January 2021.

c. Journalize the adjusting entries.

d. Journalize the closing entries.

e. Prepare a post-closing trial balance.

a. Adj. trial balance $1,000,000
Net loss $1,400

b. Gross profit $248,700
Total assets $191,900

**P5.6A (LO 5, 7)** **Financial Statement** At the end of Donaldson Department Store's fiscal year on November 30, 2020, these accounts appeared in its adjusted trial balance.

*Determine cost of goods sold and gross profit under periodic approach.*

| | |
|---|---|
| Freight-In | $ 7,500 |
| Inventory | 40,000 |
| Purchases | 585,000 |
| Purchase Discounts | 6,300 |
| Purchase Returns and Allowances | 2,700 |
| Sales Revenue | 1,000,000 |
| Sales Returns and Allowances | 20,000 |

Additional facts:

1. Merchandise inventory on November 30, 2020, is $52,600.
2. Donaldson Department Store uses a periodic system.

### Instructions

Prepare an income statement through gross profit for the year ended November 30, 2020.

Gross profit $409,100

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*Calculate missing amounts and assess profitability.*

**P5.7A (LO 5, 7)** **Writing** Kayla Inc. operates a retail operation that purchases and sells home entertainment products. The company purchases all merchandise inventory on credit and uses a periodic inventory system. The Accounts Payable account is used for recording inventory purchases only; all other current liabilities are accrued in separate accounts. You are provided with the following selected information for the fiscal years 2017 through 2020, inclusive.

| | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|
| **Income Statement Data** | | | | |
| Sales revenue | | $55,000 | $ (e) | $47,000 |
| Cost of goods sold | | (a) | 14,800 | 14,300 |
| Gross profit | | 38,300 | 35,200 | (i) |
| Operating expenses | | 34,900 | (f) | 28,800 |
| Net income | | $ (b) | $ 2,500 | $ (j) |
| **Balance Sheet Data** | | | | |
| Inventory | $7,200 | $ (c) | $ 8,100 | $ (k) |
| Accounts payable | 3,200 | 3,600 | 2,500 | (l) |
| **Additional Information** | | | | |
| Purchases of merchandise inventory on account | | $14,200 | $ (g) | $13,200 |
| Cash payments to suppliers | | (d) | (h) | 13,600 |

c. $4,700
g. $18,200
i. $32,700

### Instructions

**a.** Calculate the missing amounts.

**b.** Sales declined over the 3-year fiscal period, 2018–2020. Does that mean that profitability necessarily also declined? Explain, computing the gross profit rate and the profit margin (Net income ÷ Sales revenue) for each fiscal year to help support your answer. (Round to one decimal place.)

*Journalize, post, and prepare trial balance and partial income statement using periodic approach.*

GLS

**P5.8A (LO 7)** **Financial Statement** At the beginning of the current season on April 1, the ledger of Gage Pro Shop showed Cash $3,000, Inventory $4,000, and Owner's Capital $7,000. These transactions occurred during April 2020.

| | | |
|---|---|---|
| Apr. | 5 | Purchased golf bags, clubs, and balls on account from Tiger Co. $1,200, FOB shipping point, terms 2/10, n/60. |
| | 7 | Paid freight on Tiger Co. purchases $50. |
| | 9 | Received credit from Tiger Co. for merchandise returned $100. |
| | 10 | Sold merchandise on account to customers $600, terms n/30. |
| | 12 | Purchased golf shoes, sweaters, and other accessories on account from Classic Sportswear $450, terms 1/10, n/30. |
| | 14 | Paid Tiger Co. in full. |
| | 17 | Received credit from Classic Sportswear for merchandise returned $50. |
| | 20 | Made sales on account to customers $600, terms n/30. |
| | 21 | Paid Classic Sportswear in full. |
| | 27 | Granted credit to customers for clothing that had flaws $35. |
| | 30 | Received payments on account from customers $600. |

The chart of accounts for the pro shop includes Cash, Accounts Receivable, Inventory, Accounts Payable, Owner's Capital, Sales Revenue, Sales Returns and Allowances, Purchases, Purchase Returns and Allowances, Purchase Discounts, and Freight-In.

### Instructions

**a.** Journalize the April transactions using a periodic inventory system.

**b.** Using T-accounts, enter the beginning balances in the ledger accounts and post the April transactions.

**c.** Prepare a trial balance on April 30, 2020.

**d.** Prepare an income statement through gross profit, assuming merchandise inventory on hand at April 30 is $4,824.

c. Tot. trial balance $8,376
d. Gross profit $465

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## Continuing Case

### Cookie Creations

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(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 4.)

**CC5** Because Natalie has had such a successful first few months, she is considering other opportunities to develop her business. One opportunity is the sale of fine European mixers. The owner of Kzinski Supply Company has approached Natalie to become the exclusive U.S. distributor of these fine mixers. The current cost of a mixer is approximately $525 (U.S.), and Natalie would sell each one for $1,050. Natalie comes to you for advice on how to account for these mixers.

*Go* to **WileyPLUS** *for complete case details and instructions.*

## Ethics Case

**EC5** Tiffany Lyons was just hired as the assistant treasurer of Key West Stores. The company is a specialty chain store with nine retail stores concentrated in one metropolitan area. Among other things, the payment of all invoices is centralized in one of the departments Tiffany will manage. Her primary responsibility is to maintain the company's high credit rating by paying all bills when due and to take advantage of all cash discounts.

Jay Barnes, the former assistant treasurer who has been promoted to treasurer, is training Tiffany in her new duties. He instructs Tiffany that she is to continue the practice of preparing all checks "net of discount" and dating the checks the last day of the discount period. "But," Jay continues, "we always hold the checks at least 4 days beyond the discount period before mailing them. That way, we get another 4 days of interest on our money. Most of our creditors need our business and don't complain. And, if they scream about our missing the discount period, we blame it on the mailroom or the post office. We've only lost one discount out of every hundred we take that way. I think everybody does it. By the way, welcome to our team!"

### Instructions

**a.** What are the ethical considerations in this case?

**b.** Who are the stakeholders that are harmed or benefitted in this situation?

**c.** Should Tiffany continue the practice started by Jay? Does she have any choice?

## Comprehensive Accounting Cycle Review

**ACR5** **Financial Statement** On December 1, 2020, Rodriguez Distributing Company had the following account balances.

| | Debit | | Credit |
|---|---|---|---|
| Cash | $ 7,200 | Accumulated Depreciation—Equipment | $ 2,200 |
| Accounts Receivable | 4,600 | Accounts Payable | 4,500 |
| Inventory | 12,000 | Salaries and Wages Payable | 1,000 |
| Supplies | 1,200 | Owner's Capital | 39,300 |
| Equipment | 22,000 | | |
| | $47,000 | | $47,000 |

During December, the company completed the following summary transactions.

Dec. 6 Paid $1,600 for salaries and wages due employees, of which $600 is for December and $1,000 is for November salaries and wages payable.
8 Received $2,200 cash from customers in payment of account (no discount allowed).
10 Sold merchandise for cash $6,300. The cost of the merchandise sold was $4,100.
13 Purchased merchandise on account from Boehm Co. $9,000, terms 2/10, n/30.
15 Purchased supplies for cash $2,000.
18 Sold merchandise on account $15,000, terms 3/10, n/30. The cost of the merchandise sold was $10,000.
20 Paid salaries and wages $1,800.
23 Paid Boehm Co. in full, less discount.
27 Received collections in full, less discounts, from customers billed on December 18.

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Adjustment data:

1. Accrued salaries and wages payable $840.
2. Depreciation $200 per month.
3. Supplies on hand $1,500.

**Instructions**

**a.** Journalize the December transactions using a perpetual inventory system.

**b.** Enter the December 1 balances in the ledger T-accounts and post the December transactions. Use Cost of Goods Sold, Depreciation Expense, Salaries and Wages Expense, Sales Revenue, Sales Discounts, and Supplies Expense.

**c.** Journalize and post adjusting entries.

d. Totals $68,340

**d.** Prepare an adjusted trial balance.

e. Net income $1,610

**e.** Prepare an income statement and an owner's equity statement for December and a classified balance sheet at December 31.

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT5.1** The financial statements of **Apple Inc.** are presented in Appendix A at the end of this textbook. The complete annual report, including the notes to the financial statements, is available at the company's website.

**Instructions**

Answer the following questions using Apple's Consolidated Statement of Income.

**a.** What was the percentage change in (1) net sales and in (2) net income from 2013 to 2014 and from 2014 to 2015?

**b.** What was the company's gross profit rate in 2013, 2014, and 2015?

**c.** What was the company's percentage of net income to net sales in 2013, 2014, and 2015? Comment on any trend in this percentage.

### Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT5.2** **PepsiCo, Inc.**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

**Instructions**

**a.** Based on the information contained in these financial statements, determine each of the following for each company.

1. Gross profit for 2015.
2. Gross profit rate for 2015.
3. Operating income for 2015.
4. Percentage change in operating income from 2014 to 2015.

**b.** What conclusions concerning the relative profitability of the two companies can you draw from these data?

### Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT5.3** **Amazon.com, Inc.'s** financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. (Use Wal-Mart's January 31, 2016, financial statements for comparative purposes.) The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

**Instructions**

**a.** Based on the information contained in these financial statements, determine each of the following for each company. Use Amazon's net product sales to compute gross profit information.

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1. Gross profit for 2015.
2. Gross profit rate for 2015.
3. Operating income for 2015.
4. Percentage change in operating income from 2014 to 2015.

**b.** What conclusions concerning the relative profitability of the two companies can you draw from these data?

## Real-World Focus

**CT5.4** No financial decision-maker should ever rely solely on the financial information reported in the annual report to make decisions. It is important to keep abreast of financial news. This activity demonstrates how to search for financial news on the Web.

### Instructions

Search the Internet for an article on either **PepsiCo** or **Coca-Cola** that sounds interesting to you and then answer the following questions.

**a.** What was the source of the article (e.g., Reuters, Businesswire, PR Newswire)?

**b.** Assume that you are a personal financial planner and that one of your clients owns stock in the company. Write a brief memo to your client, summarizing the article and explaining the implications of the article for his or her investment.

## Decision-Making Across the Organization

**CT5.5** **Financial Statement** Three years ago, Amy Hessler and her brother-in-law Jacob Seelig opened Family Department Store. For the first two years, business was good, but the following condensed income results for 2019 were disappointing.

**Family Department Store**
**Income Statement**
**For the Year Ended December 31, 2019**

| | | |
|---|---|---|
| Net sales | | $700,000 |
| Cost of goods sold | | 553,000 |
| Gross profit | | 147,000 |
| Operating expenses | | |
| Selling expenses | $100,000 | |
| Administrative expenses | 20,000 | 120,000 |
| Net income | | $ 27,000 |

Amy believes the problem lies in the relatively low gross profit rate (gross profit divided by net sales) of 21%. Jacob believes the problem is that operating expenses are too high.

Amy thinks the gross profit rate can be improved by making both of the following changes. She does not anticipate that these changes will have any effect on operating expenses.

1. Increase average selling prices by 17%. This increase is expected to lower sales volume so that total sales will increase only 6%.
2. Buy merchandise in larger quantities and take all purchase discounts. These changes to selling prices and purchasing practices are expected to increase the gross profit rate from 21% to 24%.

Jacob thinks expenses can be cut by making both of the following changes. He feels that these changes will not have any effect on net sales.

1. Cut sales salaries (selling expense) of $60,000 in half and give sales personnel a commission of 2% of net sales.
2. Reduce store deliveries to one day per week rather than twice a week. This change will reduce delivery expenses (selling expense) of $30,000 by 40%.

Amy and Jacob come to you for help in deciding the best way to improve net income.

### Instructions

With the class divided into groups, answer the following.

**a.** Prepare a condensed income statement for 2020, assuming (1) Amy's changes are implemented and (2) Jacob's ideas are adopted.

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**b.** What is your recommendation to Amy and Jacob?

**c.** Prepare a condensed income statement for 2020, assuming both sets of proposed changes are made.

### Communication Activity

**CT5.6** The following situation is in chronological order.

1. Parker decides to buy a surfboard.
2. He calls Surfing USA Co. to inquire about its surfboards.
3. Two days later, he requests Surfing USA Co. to make a surfboard.
4. Three days later, Surfing USA Co. sends him a purchase order to fill out.
5. He sends back the purchase order.
6. Surfing USA Co. receives the completed purchase order.
7. Surfing USA Co. completes the surfboard.
8. Parker picks up the surfboard.
9. Surfing USA Co. bills Parker.
10. Surfing USA Co. receives payment from Parker.

#### Instructions

In a memo to the president of Surfing USA Co., answer the following.

**a.** When should Surfing USA Co. record the sale?

**b.** Suppose that with his purchase order, Parker is required to make a down payment. Would that change your answer?

### All About You

**CT5.7** There are many situations in business where it is difficult to determine the proper period in which to record revenue. Suppose that after graduation with a degree in finance, you take a job as a manager at a consumer electronics store called Impact Electronics. The company has expanded rapidly in order to compete with **Best Buy**. Impact has also begun selling gift cards for its electronic products. The cards are available in any dollar amount and allow the holder of the card to purchase an item for up to 2 years from the time the card is purchased. If the card is not used during that 2 years, it expires.

#### Instructions

Answer the following questions.

At what point should the revenue from the gift cards be recognized? Should the revenue be recognized at the time the card is sold, or should it be recorded when the card is redeemed? Explain the reasoning to support your answers.

### FASB Codification Activity

**CT5.8** If your school has a subscription to the FASB Codification, log in and prepare responses to the following.

#### Instructions

**a.** Access the glossary ("Master Glossary") to answer the following:

1. What is the definition provided for inventory?
2. What is a customer?

**b.** What guidance does the Codification provide concerning reporting inventories above cost?

## A Look at IFRS

**LEARNING OBJECTIVE 8**

Compare the accounting for merchandising under GAAP and IFRS.

The basic accounting entries for merchandising are the same under both GAAP and IFRS. The income statement is a required statement under both sets of standards. The basic format is similar although some differences do exist.

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## Key Points

Following are the key similarities and differences between GAAP and IFRS related to inventories.

### Similarities

- Under both GAAP and IFRS, a company can choose to use either a perpetual or periodic inventory systems.
- The definition of inventories is basically the same under GAAP and IFRS.
- As indicated above, the basic accounting entries for merchandising are the same under both GAAP and IFRS.
- Both GAAP and IFRS require that income statement information be presented for multiple years. For example, IFRS requires that 2 years of income statement information be presented, whereas GAAP requires 3 years.

### Differences

- Under GAAP companies generally classify income statement items by function. Classification by function leads to descriptions like administration, distribution (selling), and manufacturing. Under IFRS, companies must classify expenses either by nature or by function. Classification by nature leads to descriptions such as the following: salaries, depreciation expense, and utilities expense. If a company uses the functional-expense method on the income statement, disclosure by nature is required in the notes to the financial statements.
- Presentation of the income statement under GAAP follows either a single-step or multiple-step format. IFRS does not mention a single-step or multiple-step approach.
- Under IFRS revaluation of land, buildings, and intangible assets is permitted. The initial gains and losses resulting from this revaluation are reported as adjustments to equity, often referred to as **other comprehensive income**. The effect of this difference is that the use of IFRS results in more transactions affecting equity (other comprehensive income) but not net income.

## Looking to the Future

The IASB and FASB are working on a project that would rework the structure of financial statements. Specifically, this project will address the issue of how to classify various items in the income statement. A main goal of this new approach is to provide information that better represents how businesses are run. In addition, this approach draws attention away from just one number—net income. It will adopt major groupings similar to those currently used by the statement of cash flows (operating, investing, and financing), so that numbers can be more readily traced across statements. For example, the amount of income that is generated by operations would be traceable to the assets and liabilities used to generate the income. Finally, this approach would also provide detail, beyond that currently seen in most statements (either GAAP or IFRS), by requiring that line items be presented both by function and by nature. The new financial statement format was heavily influenced by suggestions from financial statement analysts.

# IFRS Practice

## IFRS Self-Test Questions

**1.** Which of the following would **not** be included in the definition of inventory under IFRS?

**a.** Photocopy paper held for sale by an office supply store.

**b.** Stereo equipment held for sale by an electronics store.

**c.** Used office equipment held for sale by the human relations department of a plastics company.

**d.** All of the above would meet the definition.

**2.** Which of the following would **not** be a line item of a company reporting costs by nature?

**a.** Depreciation expense.

**b.** Salaries expense.

**c.** Interest expense.

**d.** Manufacturing expense.

**3.** Which of the following would **not** be a line item of a company reporting costs by function?

**a.** Administration.

**b.** Manufacturing.

**c.** Utilities expense.

**d.** Distribution.

**4.** Which of the following statements is **false**?

**a.** IFRS specifically requires use of a multiple-step income statement.

**b.** Under IFRS, companies can use either a perpetual or periodic system.

**c.** The proposed new format for financial statements was heavily influenced by the suggestions of financial statement analysts.

**d.** The new income statement format will try to de-emphasize the focus on the "net income" line item.

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## IFRS Exercises

**IFRS5.1** Explain the difference between the "nature-of-expense" and "function-of-expense" classifications.

**IFRS5.2** For each of the following income statement line items, state whether the item is a "by nature" expense item or a "by function" expense item.

_____ Cost of goods sold
_____ Depreciation expense
_____ Salaries and wages expense
_____ Selling expenses
_____ Utilities expense
_____ Delivery expense
_____ General and administrative expenses

**IFRS5.3** Matilda Company reported the following amounts (in euros) in 2020: Net income, €150,000; Unrealized gain related to revaluation of buildings, €10,000; and Unrealized loss on non-trading securities, €(35,000). Determine Matilda's total comprehensive income for 2020.

## International Financial Reporting Problem: Louis Vuitton

**IFRS5.4** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

### Instructions

Use Louis Vuitton's annual report to answer the following questions.

**a.** Does Louis Vuitton use a multiple-step or a single-step income statement format? Explain how you made your determination.

**b.** Instead of "interest expense," what label does Louis Vuitton use for interest costs that it incurs?

**c.** Using the notes to the company's financial statements, determine the following:

**1.** Composition of the inventory.

**2.** Amount of inventory (gross) before impairment.

### Answers to IFRS Self-Test Questions

**1.** c **2.** d **3.** c **4.** a

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# Inventories

## Chapter Preview

In the previous chapter, we discussed the accounting for merchandise inventory using a perpetual inventory system. In this chapter, we explain the methods used to calculate the cost of inventory on hand at the balance sheet date and the cost of goods sold.

## Feature Story

### "Where Is That Spare Bulldozer Blade?"

Let's talk inventory—big, bulldozer-size inventory. **Caterpillar Inc.** is the world's largest manufacturer of construction and mining equipment, diesel and natural gas engines, and industrial gas turbines. It sells its products in over 200 countries, making it one of the most successful U.S. exporters. More than 70% of its productive assets are located domestically, and nearly 50% of its sales are foreign.

In the past, Caterpillar's profitability suffered, but today it is very successful. A big part of this turnaround can be attributed to effective management of its inventory. Imagine what it costs Caterpillar to have too many bulldozers sitting around in inventory—a situation the company definitely wants to avoid. Yet Caterpillar must also make sure it has enough inventory to meet demand.

At one time during a 7-year period, Caterpillar's sales increased by 100% while its inventory increased by only 50%. To achieve this dramatic reduction in the amount of resources tied up in inventory while continuing to meet customers' needs, Caterpillar used a two-pronged approach. First, it completed a factory modernization program, which greatly increased its production efficiency. The program reduced by 60% the amount of inventory the company processes at any one time. It also reduced by an incredible 75% the time it takes to manufacture a part.

Second, Caterpillar dramatically improved its parts distribution system. It ships more than 100,000 items daily from its

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23 distribution centers strategically located around the world (10 million square feet of warehouse space—remember, we're talking bulldozers). The company can virtually guarantee that it can get any part to anywhere in the world within 24 hours.

These changes led to record exports, profits, and revenues for Caterpillar. It would seem that things couldn't be better. But industry analysts, as well as the company's managers, thought otherwise. In order to maintain Caterpillar's position as the industry leader, management began another major overhaul of inventory production and inventory management processes. The goal: to cut the number of repairs in half, increase productivity by 20%, and increase inventory turnover by 40%.

In short, Caterpillar's ability to manage its inventory has been a key reason for its past success and will very likely play a huge part in its future profitability as well.

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Discuss how to classify and determine inventory. | • Classifying inventory<br>• Determining inventory quantities | **DO IT! 1** Rules of Ownership |
| **LO 2** Apply inventory cost flow methods and discuss their financial effects. | • Specific identification<br>• Cost flow assumptions<br>• Financial statement and tax effects<br>• Using inventory cost flow methods consistently | **DO IT! 2** Cost Flow Methods |
| **LO 3** Indicate the effects of inventory errors on the financial statements. | • Income statement effects<br>• Balance sheet effects | **DO IT! 3** Inventory Errors |
| **LO 4** Explain the statement presentation and analysis of inventory. | • Presentation<br>• Lower-of-cost-or-net realizable value<br>• Analysis | **DO IT! 4** LCNRV and Inventory Turnover |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

## Classifying and Determining Inventory

**LEARNING OBJECTIVE 1**
Discuss how to classify and determine inventory.

Two important steps in the reporting of inventory at the end of the accounting period are the classification of inventory based on its degree of completeness and the determination of inventory amounts.

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## Classifying Inventory

How a company classifies its inventory depends on whether the firm is a merchandiser or a manufacturer. In a **merchandising** company, such as those described in Chapter 5, inventory consists of many different items. For example, in a grocery store, canned goods, dairy products, meats, and produce are just a few of the inventory items on hand. These items have two common characteristics: (1) they are owned by the company, and (2) they are in a form ready for sale to customers in the ordinary course of business. Thus, merchandisers need only one inventory classification, **merchandise inventory**, to describe the many different items that make up the total inventory.

In a **manufacturing** company, some inventory may not yet be ready for sale. As a result, manufacturers usually classify inventory into three categories: finished goods, work in process, and raw materials (see **Helpful Hint**). **Finished goods inventory** is manufactured items that are completed and ready for sale. **Work in process** is that portion of manufactured inventory that has been placed into the production process but is not yet complete. **Raw materials** are the basic goods that will be used in production but have not yet been placed into production.

**HELPFUL HINT**

**Regardless of the classification, companies report all inventories under Current Assets on the balance sheet.**

For example, **Caterpillar** classifies earth-moving tractors completed and ready for sale as **finished goods**. It classifies the tractors on the assembly line in various stages of production as **work in process**. The steel, glass, tires, and other components that are on hand waiting to be used in the production of tractors are identified as **raw materials**. **Illustration 6.1** shows an adapted excerpt from Note 7 of Caterpillar's annual report.

**ILLUSTRATION 6.1**

**Composition of Caterpillar's inventory**

| | December 31 | |
|---|---|---|
| **(millions of dollars)** | **2016** | **2015** |
| Raw materials | $2,102 | $2,467 |
| Work-in-process | 1,719 | 1,857 |
| Finished goods | 4,576 | 5,122 |
| Supplies | 217 | 254 |
| **Total inventories** | **$8,614** | **$9,700** |

**By observing the levels and changes in the levels of these three inventory types, financial statement users can gain insight into management's production plans.** For example, low levels of raw materials and high levels of finished goods suggest that management believes it has enough inventory on hand and production will be slowing down—perhaps in anticipation of a recession. Conversely, high levels of raw materials and low levels of finished goods probably signal that management is planning to step up production.

Many companies have significantly lowered inventory levels and costs using **just-in-time (JIT) inventory** methods. Under a just-in-time method, companies manufacture or purchase goods only when needed. **Dell** is famous for having developed a system for making computers in response to individual customer requests. Even though it makes each computer to meet each customer's particular specifications, Dell is able to assemble the computer and put it on a truck in less than 48 hours. The success of the JIT system depends on reliable suppliers. By integrating its information systems with those of its suppliers, Dell reduced its inventories to nearly zero. This is a huge advantage in an industry where products become obsolete nearly overnight.

The accounting concepts discussed in this chapter apply to the inventory classifications of both merchandising and manufacturing companies. Our focus here is on merchandise inventory. Additional issues specific to manufacturing companies are discussed as part of managerial accounting.

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## Accounting Across the Organization Ford

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### A Big Hiccup

JIT can save a company a lot of money, but it isn't without risk. An unexpected disruption in the supply chain can cost a company a lot of money. Japanese automakers experienced just such a disruption when a 6.8-magnitude earthquake caused major damage to the company that produces 50% of their piston rings. The rings themselves cost only $1.50, but you can't make a car without them. As a result, the automakers were forced to shut down production for a few days—a loss of tens of thousands of cars.

Similarly, a major snowstorm halted production at the Canadian plants of **Ford**. A Ford spokesperson said, "Because the plants run with just-in-time inventory, we don't have large stockpiles of parts sitting around. When you have a somewhat significant disruption, you can pretty quickly run out of parts."

**Sources:** Amy Chozick, "A Key Strategy of Japan's Car Makers Backfires," *Wall Street Journal* (July 20, 2007); and Kate Linebaugh, "Canada Military Evacuates Motorists Stranded by Snow," *Wall Street Journal* (December 15, 2010).

**What steps might the companies take to avoid such a serious disruption in the future? (Go to WileyPLUS for this answer and additional questions.)**

# Determining Inventory Quantities

No matter whether they are using a periodic or perpetual inventory system, all companies need to determine inventory quantities at the end of the accounting period. If using a perpetual system, companies take a physical inventory for the following reasons:

1. To check the accuracy of their perpetual inventory records.
2. To determine the amount of inventory lost due to wasted raw materials, shoplifting, or employee theft.

Companies using a periodic inventory system take a physical inventory for **two different purposes**: to determine the inventory on hand at the balance sheet date, and to determine the cost of goods sold for the period.

Determining inventory quantities involves two steps: (1) taking a physical inventory of goods on hand and (2) determining the ownership of goods.

## Taking a Physical Inventory

**ETHICS NOTE**

**In a famous fraud, a salad oil company filled its storage tanks mostly with water. The oil rose to the top, so auditors thought the tanks were full of oil. The company also said it had more tanks than it really did: It repainted numbers on the tanks to confuse auditors.**

Companies take a physical inventory at the end of the accounting period. Taking a physical inventory involves actually counting, weighing, or measuring each kind of inventory on hand (see **Ethics Note**). In many companies, taking an inventory is a formidable task. Retailers such as **Target**, **True Value Hardware**, or **Home Depot** have thousands of different inventory items. An inventory count is generally more accurate when goods are not being sold or received during the counting. Consequently, companies often "take inventory" when the business is closed or when business is slow. Many retailers close early on a chosen day in January—after the holiday sales and returns, when inventories are at their lowest level—to count inventory. **Wal-Mart Stores, Inc.**, for example, has a year-end of January 31.

## Determining Ownership of Goods

One challenge in computing inventory quantities is determining what inventory a company owns. To determine ownership of goods, two questions must be answered: Do all of the goods included in the count belong to the company? Does the company own any goods that were not included in the count?

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## Ethics Insight Leslie Fay

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### Falsifying Inventory to Boost Income

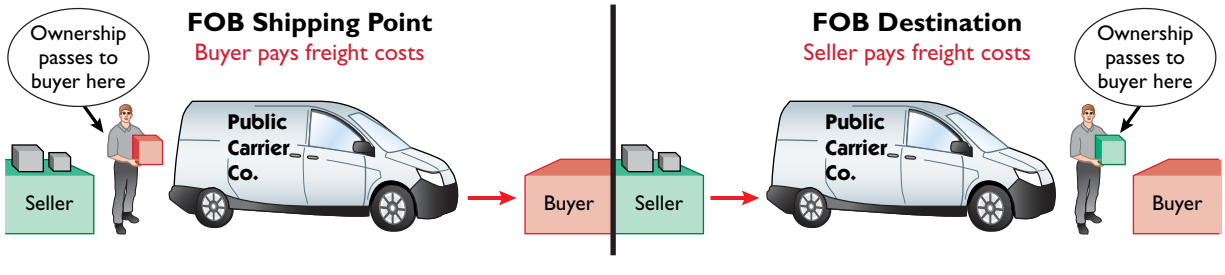
Managers at women's apparel maker **Leslie Fay** were convicted of falsifying inventory records to boost net income in an attempt to increase management bonuses. In another case, executives at **Craig Consumer Electronics** were accused of defrauding lenders by manipulating inventory records. The indictment said the company classified "defective goods as new or refurbished" and claimed that it owned certain shipments "from overseas suppliers" when, in fact, Craig either did not own the shipments or the shipments did not exist.

**What effect does an overstatement of inventory have on a company's financial statements? (Go to WileyPLUS for this answer and additional questions.)**

**Goods in Transit.** A complication in determining ownership is **goods in transit** (on board a truck, train, ship, or plane) at the end of the period. The company may have purchased goods that have not yet been received, or it may have sold goods that have not yet been delivered. To arrive at an accurate count, the company must determine ownership of these goods.

Goods in transit should be included in the inventory of the company that has legal title to the goods. Legal title is determined by the terms of the sale, as shown in **Illustration 6.2** and described below.

**ILLUSTRATION 6.2** **Terms of sale**




1. When the terms are **FOB (free on board) shipping point**, ownership of the goods passes to the buyer when the public carrier accepts the goods from the seller.
2. When the terms are **FOB destination**, ownership of the goods remains with the seller until the goods reach the buyer.

If goods in transit at the statement date are ignored, inventory quantities may be seriously miscounted. Assume, for example, that Hargrove Company has 20,000 units of inventory on hand on December 31. It also has the following goods in transit:

1. Sales of 1,500 units shipped December 31 FOB destination.
2. Purchases of 2,500 units shipped FOB shipping point by the seller on December 31.

Hargrove has legal title to both the 1,500 units sold and the 2,500 units purchased. If the company ignores the units in transit, it would understate inventory quantities by 4,000 units (1,500 + 2,500).

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As we will see later in the chapter, inaccurate inventory counts affect not only the inventory amount shown on the balance sheet but also the cost of goods sold calculation on the income statement.

**Consigned Goods.** In some lines of business, it is common to hold the goods of other parties and try to sell the goods for them for a fee, but without taking ownership of the goods. These are called **consigned goods**.

For example, you might have a used car that you would like to sell. If you take the item to a dealer, the dealer might be willing to put the car on its lot and charge you a commission if it is sold. Under this agreement, the dealer **would not take ownership** of the car, which would still belong to you. Therefore, if an inventory count were taken, the car would not be included in the dealer's inventory because the dealer does not own it.

Many car, boat, and antique dealers sell goods on consignment to keep their inventory costs down and to avoid the risk of purchasing an item that they will not be able to sell. Today, even some manufacturers are making consignment agreements with their suppliers in order to keep their inventory levels low.

## Anatomy of a Fraud

Ted Nickerson, CEO of clock manufacturer Dally Industries, had expensive tastes. To support this habit, Ted took out large loans, which he collateralized with his shares of Dally Industries stock. If the price of Dally's stock fell, he was required to provide the bank with more shares of stock. To achieve target net income figures and thus maintain the stock price, Ted coerced employees in the company to alter inventory figures. Inventory quantities were manipulated by changing the amounts on inventory control tags after the year-end physical inventory count. For example, if a tag said there were 20 units of a particular item, the tag was changed to 220. Similarly, the unit costs that were used to determine the value of ending inventory were increased from, for example, $125 per unit to $1,250. Both of these fraudulent changes had the effect of increasing the amount of reported ending inventory. This reduced cost of goods sold and increased net income.

### Total take: $245,000

### The Missing Control

**Independent internal verification.** The company should have spot-checked its inventory records periodically, verifying that the number of units in the records agreed with the amount on hand and that the unit costs agreed with vendor price sheets.

Source: Adapted from Wells, *Fraud Casebook* (2007), pp. 502–509.

## DO IT! 1 | Rules of Ownership

Hasbeen Company completed its inventory count. It arrived at a total inventory value of $200,000. As a new member of Hasbeen's accounting department, you have been given the information listed below. Discuss how this information affects the reported cost of inventory.

1. Hasbeen included in the inventory goods held on consignment for Falls Co., costing $15,000.
2. The company did not include in the count purchased goods of $10,000 which were in transit (terms: FOB shipping point).
3. The company did not include in the count sold inventory with a cost of $12,000 which was in transit (terms: FOB shipping point).

**ACTION PLAN**

- Apply the rules of ownership to goods held on consignment.
- Apply the rules of ownership to goods in transit.

### Solution

The goods of $15,000 held on consignment should be deducted from the inventory count. The goods of $10,000 purchased FOB shipping point should be added to the inventory count. Sold goods of $12,000 which were in transit FOB shipping point should not be included in the ending inventory. Thus, inventory should be carried at $195,000 ($200,000 − $15,000 + $10,000).

Related exercise material: **BE6.1, BE6.2, DO IT! 6.1, E6.1, E6.2, and E6.3.**

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# Inventory Methods and Financial Effects

**LEARNING OBJECTIVE 2**

Apply inventory cost flow methods and discuss their financial effects.

Inventory is accounted for at cost. Cost includes all expenditures necessary to acquire goods and place them in a condition ready for sale. For example, freight costs incurred to acquire inventory are added to the cost of inventory, but the cost of shipping goods to a customer is a selling expense.

After a company has determined the quantity of units of inventory, it applies unit costs to the quantities to compute the total cost of the inventory and the cost of goods sold. This process can be complicated if a company has purchased inventory items at different times and at different prices.

For example, assume that Crivitz TV Company purchases three identical 50-inch TVs on different dates at costs of $720, $750, and $800. During the year, Crivitz sold two TVs at $1,200 each. These facts are summarized in **Illustration 6.3**.

**ILLUSTRATION 6.3**
**Data for inventory costing example**

| | | | |
|---|---|---|---|
| **Purchases** | | | |
| February 3 | 1 TV | at | $720 |
| March 5 | 1 TV | at | $750 |
| May 22 | 1 TV | at | $800 |
| **Sales** | | | |
| June 1 | 2 TVs | for | $2,400 ($1,200 × 2) |

Cost of goods sold will differ depending on which two TVs the company sold. For example, it might be $1,470 ($720 + $750), or $1,520 ($720 + $800), or $1,550 ($750 + $800). In this section, we discuss alternative costing methods available to Crivitz.

## Specific Identification

If Crivitz can positively identify which particular units it sold and which are still in ending inventory, it can use the **specific identification method** of inventory costing. For example, if Crivitz sold the TVs it purchased on February 3 and May 22, then its cost of goods sold is $1,520 ($720 + $800), and its ending inventory is $750 (see **Illustration 6.4**). Using this method, companies can accurately determine ending inventory and cost of goods sold.

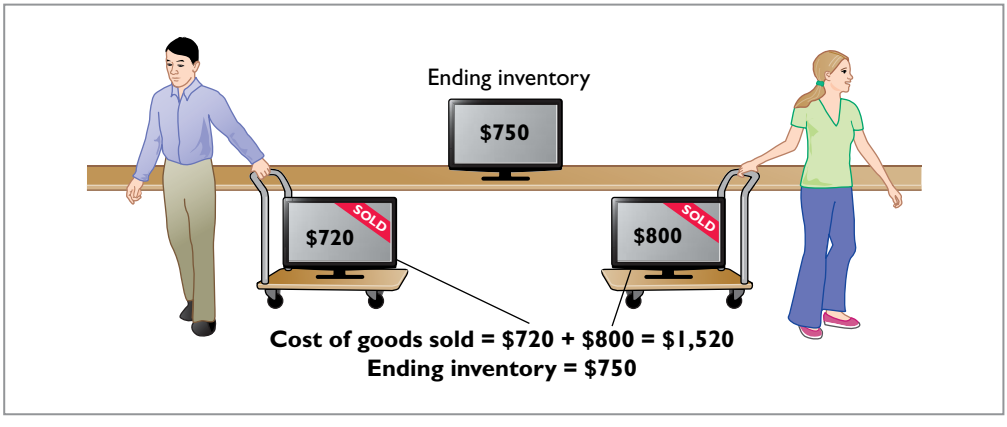


**ILLUSTRATION 6.4**
**Specific identification method**

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**ETHICS NOTE**

**A major disadvantage of the specific identification method is that management may be able to manipulate net income. For example, it can boost net income by selling units purchased at a low cost, or reduce net income by selling units purchased at a high cost.**

Specific identification requires that companies keep records of the original cost of each individual inventory item. Historically, specific identification was possible only when a company sold a limited variety of high-unit-cost items that could be identified clearly from the time of purchase through the time of sale. Examples of such products are cars, pianos, or expensive antiques.

Today, bar coding, electronic product codes, and radio frequency identification make it theoretically possible to do specific identification with nearly any type of product. The reality is, however, that this practice is still relatively rare (see Ethics Note). Instead, rather than keep track of the cost of each particular item sold, most companies make assumptions, called **cost flow assumptions**, about which units were sold.

## Cost Flow Assumptions

Because specific identification is often impractical, other cost flow methods are permitted. These differ from specific identification in that they **assume** flows of costs that may be unrelated to the physical flow of goods. There are three assumed cost flow methods:

1. First-in, first-out (FIFO)
2. Last-in, first-out (LIFO)
3. Average-cost

**There is no accounting requirement that the cost flow assumption be consistent with the physical movement of the goods.** Company management selects the appropriate cost flow method.

To demonstrate the three cost flow methods, we will use a **periodic** inventory system. We assume a periodic system because **very few companies use perpetual LIFO, FIFO, or average-cost** to cost their inventory and related cost of goods sold. Instead, companies that use perpetual systems often use an assumed cost (called a standard cost) to record cost of goods sold at the time of sale. Then, at the end of the period when they count their inventory, they **recalculate cost of goods sold using periodic FIFO, LIFO, or average-cost** as shown in this chapter and adjust cost of goods sold to this recalculated number.[1]

To illustrate the three inventory cost flow methods, we will use the data for Houston Electronics' Astro condensers, shown in Illustration 6.5.

**ILLUSTRATION 6.5**
**Data for Houston Electronics**

**Houston Electronics**
**Astro Condensers**

| Date | Explanation | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| Jan. 1 | Beginning inventory | 100 | $10 | $ 1,000 |
| Apr. 15 | Purchase | 200 | 11 | 2,200 |
| Aug. 24 | Purchase | 300 | 12 | 3,600 |
| Nov. 27 | Purchase | 400 | 13 | 5,200 |
| | Total units available for sale | 1,000 | | $12,000 |
| | Units in ending inventory | 450 | | |
| | Units sold | 550 | | |

The cost of goods sold formula in a periodic system is:

**Beginning Inventory + Cost of Goods Purchased − Ending Inventory = Cost of Goods Sold**

[1]Also, some companies use a perpetual system to keep track of units, but they do not make an entry for perpetual cost of goods sold. In addition, firms that employ LIFO tend to use **dollar-value LIFO**, a method discussed in upper-level courses. FIFO periodic and FIFO perpetual give the same result. Therefore, companies should not incur the additional cost to use FIFO perpetual. Few companies use perpetual average-cost because of the added cost of recordkeeping. Finally, for instructional purposes, we believe it is easier to demonstrate the cost flow assumptions under the periodic system, which makes it more pedagogically appropriate.

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Houston Electronics had a total of 1,000 units available to sell during the period (beginning inventory plus purchases). The total cost of these 1,000 units is $12,000, referred to as **cost of goods available for sale**. A physical inventory taken at December 31 determined that there were 450 units in ending inventory. Therefore, Houston sold 550 units (1,000 – 450) during the period. To determine the cost of the 550 units that were sold (the cost of goods sold), we assign a cost to the ending inventory and subtract that value from the cost of goods available for sale. The value assigned to the ending inventory **depends on which cost flow method we use**. No matter which cost flow assumption we use, though, the sum of cost of goods sold plus the cost of the ending inventory must equal the cost of goods available for sale—in this case, $12,000.

## First-In, First-Out (FIFO)

The **first-in, first-out (FIFO) method** assumes that the **earliest goods** purchased are the first to be sold. FIFO often parallels the actual physical flow of merchandise. That is, it generally is good business practice to sell the oldest units first. Under the FIFO method, therefore, the **costs** of the earliest goods purchased are the first to be recognized in determining cost of goods sold. (This does not necessarily mean that the oldest units **are** sold first, but that the costs of the oldest units are **recognized** first. In a bin of picture hangers at the hardware store, for example, no one really knows, nor would it matter, which hangers are sold first.) Illustration 6.6 shows the allocation of the cost of goods available for sale at Houston Electronics under FIFO (see Helpful Hint).

**COST OF GOODS AVAILABLE FOR SALE**

| Date | Explanation | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| Jan. 1 | Beginning inventory | 100 | $10 | $ 1,000 |
| Apr. 15 | Purchase | 200 | 11 | 2,200 |
| Aug. 24 | Purchase | 300 | 12 | 3,600 |
| Nov. 27 | Purchase | 400 | 13 | 5,200 |
| | Total | 1,000 | | $12,000 |

**STEP 1: ENDING INVENTORY**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| Nov. 27 | 400 | $13 | $5,200 |
| Aug. 24 | 50 | 12 | 600 |
| Total | 450 | | $5,800 |

**STEP 2: COST OF GOODS SOLD**

| | |
|---|---|
| Cost of goods available for sale | $12,000 |
| Less: Ending inventory | 5,800 |
| Cost of goods sold | $ 6,200 |

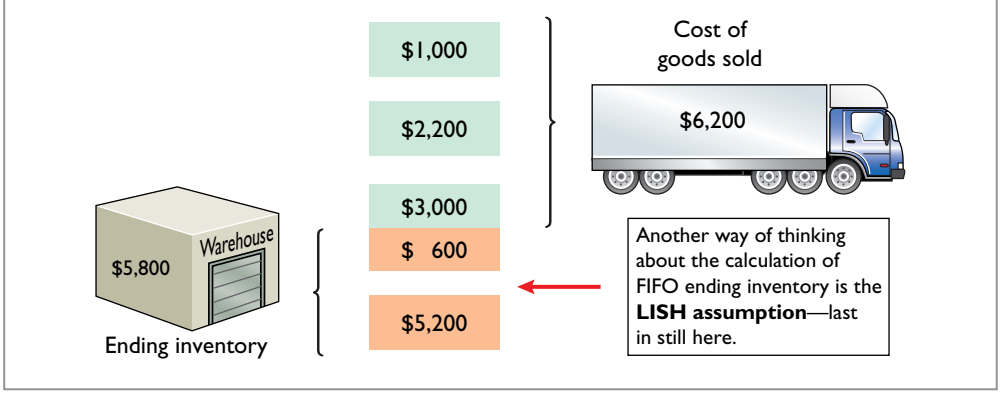


**ILLUSTRATION 6.6**
**Allocation of costs—FIFO method**

**HELPFUL HINT**
Note the sequencing of the allocation: (1) compute ending inventory, and (2) determine cost of goods sold.

Under FIFO, since it is assumed that the first goods purchased were the first goods sold, ending inventory is based on the prices of the most recent units purchased. That is, **under FIFO, companies obtain the cost of the ending inventory by taking the unit cost**

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**of the most recent purchase and working backward until all units of inventory have been costed**. In this example, Houston Electronics prices the 450 units of ending inventory using the **most recent** prices. The last purchase was 400 units at $13 on November 27. The remaining 50 units are priced using the unit cost of the second most recent purchase, $12, on August 24. Next, Houston Electronics calculates cost of goods sold by subtracting the cost of the units **not sold** (ending inventory) from the cost of all goods available for sale.

Illustration 6.7 demonstrates that companies also can calculate cost of goods sold by pricing the 550 units sold using the prices of the first 550 units acquired. Note that of the 300 units purchased on August 24, only 250 units are assumed sold. This agrees with our calculation of the cost of ending inventory, where 50 of these units were assumed unsold and thus included in ending inventory.

**ILLUSTRATION 6.7**
**Proof of cost of goods sold**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| Jan. 1 | 100 | $10 | $1,000 |
| Apr. 15 | 200 | 11 | 2,200 |
| Aug. 24 | 250 | 12 | 3,000 |
| Total | 550 | | $6,200 |

## Last-In, First-Out (LIFO)

The **last-in, first-out (LIFO) method** assumes that the **latest goods** purchased are the first to be sold. LIFO seldom coincides with the actual physical flow of inventory. (Exceptions include goods stored in piles, such as coal or hay, where goods are removed from the top of the pile as they are sold.) Under the LIFO method, the **costs** of the latest goods purchased are the first to be recognized in determining cost of goods sold. Illustration 6.8 shows the allocation of the cost of goods available for sale at Houston Electronics under LIFO.

**ILLUSTRATION 6.8**
**Allocation of costs—LIFO method**

**COST OF GOODS AVAILABLE FOR SALE**

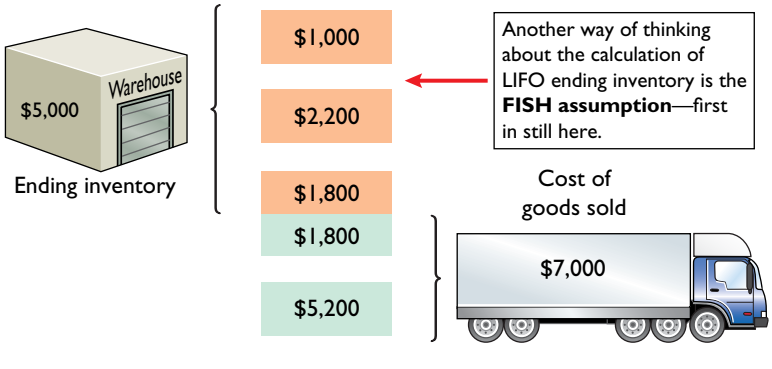
| Date | Explanation | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| Jan. 1 | Beginning inventory | 100 | $10 | $ 1,000 |
| Apr. 15 | Purchase | 200 | 11 | 2,200 |
| Aug. 24 | Purchase | 300 | 12 | 3,600 |
| Nov. 27 | Purchase | 400 | 13 | 5,200 |
| | Total | 1,000 | | $12,000 |

**STEP 1: ENDING INVENTORY**

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| Jan. 1 | 100 | $10 | $1,000 |
| Apr. 15 | 200 | 11 | 2,200 |
| Aug. 24 | 150 | 12 | 1,800 |
| Total | 450 | | $5,000 |

**STEP 2: COST OF GOODS SOLD**

| | |
|---|---|
| Cost of goods available for sale | $12,000 |
| Less: Ending inventory | 5,000 |
| Cost of goods sold | $ 7,000 |



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Under LIFO, since it is assumed that the first goods sold were those that were most recently purchased, ending inventory is based on the prices of the oldest units purchased. That is, **under LIFO, companies obtain the cost of the ending inventory by taking the unit cost of the earliest goods available for sale and working forward until all units of inventory have been costed**. In this example, Houston Electronics prices the 450 units of ending inventory using the **earliest** prices. The first purchase was 100 units at $10 in the January 1 beginning inventory. Then, 200 units were purchased at $11. The remaining 150 units needed are priced at $12 per unit (August 24 purchase). Next, Houston Electronics calculates cost of goods sold by subtracting the cost of the units **not sold** (ending inventory) from the cost of all goods available for sale.

**Illustration 6.9** demonstrates that companies also can calculate cost of goods sold by pricing the 550 units sold using the prices of the last 550 units acquired. Note that of the 300 units purchased on August 24, only 150 units are assumed sold. This agrees with our calculation of the cost of ending inventory, where 150 of these units were assumed unsold and thus included in ending inventory.

| Date | Units | Unit Cost | Total Cost |
|---|---|---|---|
| Nov. 27 | 400 | $13 | $5,200 |
| Aug. 24 | 150 | 12 | 1,800 |
| Total | 550 | | $7,000 |

**ILLUSTRATION 6.9**
**Proof of cost of goods sold**

Under a periodic inventory system, which we are using here, **all goods purchased during the period are assumed to be available for the first sale, regardless of the date of purchase**.

## Average-Cost

The **average-cost method** allocates the cost of goods available for sale on the basis of the **weighted-average unit cost** incurred. The average-cost method assumes that goods are similar in nature. **Illustration 6.10** presents the formula and a sample computation of the weighted-average unit cost.

| Cost of Goods Available for Sale | ÷ | Total Units Available for Sale | = | Weighted-Average Unit Cost |
|---|---|---|---|---|
| $12,000 | ÷ | 1,000 | = | $12 |

**ILLUSTRATION 6.10**
**Formula for weighted-average unit cost**

The company then applies the weighted-average unit cost to the units on hand to determine the cost of the ending inventory. **Illustration 6.11** shows the allocation of the cost of goods available for sale at Houston Electronics using average-cost.

| COST OF GOODS AVAILABLE FOR SALE | | | | |
|---|---|---|---|---|
| **Date** | **Explanation** | **Units** | **Unit Cost** | **Total Cost** |
| Jan. 1 | Beginning inventory | 100 | $10 | $ 1,000 |
| Apr. 15 | Purchase | 200 | 11 | 2,200 |
| Aug. 24 | Purchase | 300 | 12 | 3,600 |
| Nov. 27 | Purchase | 400 | 13 | 5,200 |
| | Total | 1,000 | | $12,000 |

**ILLUSTRATION 6.11**
**Allocation of costs—average-cost method**

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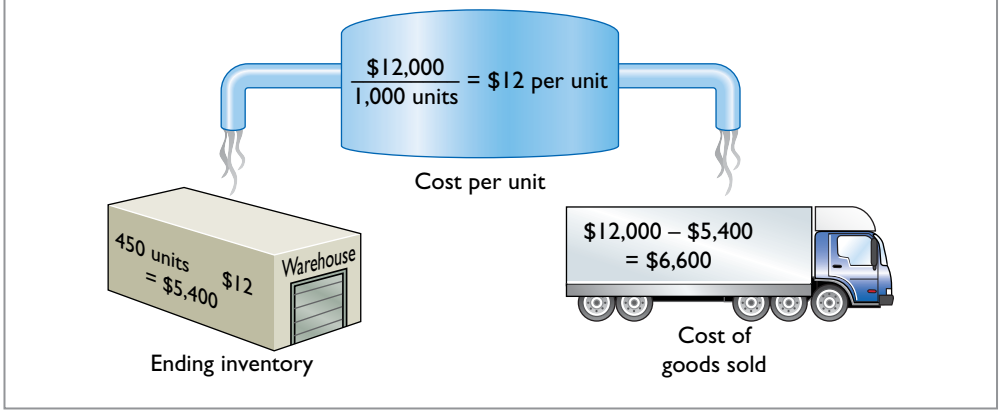
**ILLUSTRATION 6.11**
(*Continued*)

| STEP 1: ENDING INVENTORY | | | | STEP 2: COST OF GOODS SOLD | |
|---|---|---|---|---|---|
| $12,000 | ÷ 1,000 | = | $12 | Cost of goods available for sale | $12,000 |
| | | | | Less: Ending inventory | 5,400 |
| **Units** | **Unit Cost** | | **Total Cost** | Cost of goods sold | **$ 6,600** |
| 450 | $12 | | **$5,400** | | |




We can verify the cost of goods sold under this method by multiplying the units sold times the weighted-average unit cost (550 × $12 = $6,600). Note that this method does **not** use the average of the unit costs. That average is $11.50 ($10 + $11 + $12 + $13 = $46; $46 ÷ 4). The average-cost method instead uses the average **weighted by** the quantities purchased at each unit cost.

## Financial Statement and Tax Effects of Cost Flow Methods

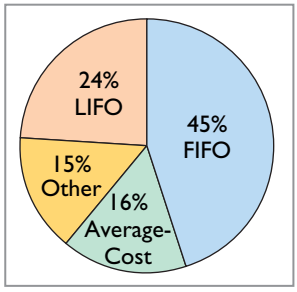



**ILLUSTRATION 6.12**
**Use of cost flow methods in major U.S. companies**

Each of the three assumed cost flow methods is acceptable for use. For example, **Reebok International Ltd.** and **Wendy's International** currently use the FIFO method of inventory costing. **Campbell Soup Company**, **Kroger**, and **Walgreen Drugs** use LIFO for part or all of their inventory. **Bristol-Myers Squibb**, **Starbucks**, and **Motorola** use the average-cost method. In fact, a company may also use more than one cost flow method at the same time. **Stanley Black & Decker Manufacturing Company**, for example, uses LIFO for domestic inventories and FIFO for foreign inventories. **Illustration 6.12** shows the use of the three cost flow methods in 500 large U.S. companies.

The reasons companies adopt different inventory cost flow methods are varied, but they usually involve one of three factors: (1) income statement effects, (2) balance sheet effects, or (3) tax effects.

### Income Statement Effects

To understand why companies might choose a particular cost flow method, let's examine the effects of the different cost flow assumptions on the financial statements of Houston Electronics. The condensed income statements in **Illustration 6.13** assume that Houston sold its 550 units for $18,500, had operating expenses of $9,000, and is subject to an income tax rate of 30%.

Note the cost of goods available for sale ($12,000) is the same under each of the three inventory cost flow methods. However, the ending inventories and the costs of goods sold are different. This difference is due to the unit costs that the company allocated to cost of goods sold and to ending inventory. Each dollar of difference in ending inventory results in a corresponding dollar difference in income before income taxes. For Houston, an $800 difference exists between FIFO and LIFO cost of goods sold.

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**ILLUSTRATION 6.13**
**Comparative effects of cost flow methods**

**Houston Electronics**
**Condensed Income Statements**

| | FIFO | LIFO | Average-Cost |
|---|---|---|---|
| Sales revenue | $18,500 | $18,500 | $18,500 |
| Beginning inventory | 1,000 | 1,000 | 1,000 |
| Purchases | 11,000 | 11,000 | 11,000 |
| Cost of goods available for sale | 12,000 | 12,000 | 12,000 |
| Ending inventory | **5,800** | **5,000** | **5,400** |
| Cost of goods sold | 6,200 | 7,000 | 6,600 |
| Gross profit | 12,300 | 11,500 | 11,900 |
| Operating expenses | 9,000 | 9,000 | 9,000 |
| Income before income taxes* | 3,300 | 2,500 | 2,900 |
| Income tax expense (30%) | 990 | 750 | 870 |
| Net income | **$ 2,310** | **$ 1,750** | **$ 2,030** |

*We are assuming that Houston Electronics is a corporation, and corporations are required to pay income taxes.

In periods of changing prices, the cost flow assumption can have significant impacts both on income and on evaluations of income, such as the following.

1. In a period of inflation, FIFO produces a higher net income because lower unit costs of the first units purchased are matched against revenue.
2. In a period of inflation, LIFO produces a lower net income because higher unit costs of the last goods purchased are matched against revenue.
3. If prices are falling, the results from the use of FIFO and LIFO are reversed. FIFO will report the lowest net income and LIFO the highest.
4. Regardless of whether prices are rising or falling, average-cost produces net income between FIFO and LIFO.

As shown in the Houston example (Illustration 6.13), in a period of rising prices FIFO reports the highest net income ($2,310) and LIFO the lowest ($1,750); average-cost falls between these two amounts ($2,030).

To management, higher net income is an advantage. It causes external users to view the company more favorably. In addition, management bonuses, if based on net income, will be higher. Therefore, when prices are rising (which is usually the case), companies tend to prefer FIFO because it results in higher net income.

Others believe that LIFO presents a more realistic net income number. That is, LIFO matches the more recent costs against current revenues to provide a better measure of net income. During periods of inflation, many challenge the quality of non-LIFO earnings, noting that failing to match current costs against current revenues leads to an understatement of cost of goods sold and an overstatement of net income. As some indicate, net income computed using FIFO creates **"paper or phantom profits"**—that is, earnings that do not really exist.

## Balance Sheet Effects

A major advantage of the FIFO method is that in a period of inflation, the costs allocated to ending inventory will approximate their current cost. For example, for Houston Electronics, 400 of the 450 units in the ending inventory are costed under FIFO at the higher November 27 unit cost of $13.

Conversely, a major shortcoming of the LIFO method is that in a period of inflation, the costs allocated to ending inventory may be significantly understated in terms of current cost. The understatement becomes greater over prolonged periods of inflation if the inventory includes goods purchased in one or more prior accounting periods. For example, **Caterpillar** has used LIFO for more than 50 years. Its balance sheet shows

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ending inventory of $9,700 million. But the inventory's actual current cost if FIFO had been used is $12,189 million.

### Tax Effects

**HELPFUL HINT**

**A tax rule, often referred to as the LIFO conformity rule, requires that if companies use LIFO for tax purposes they must also use it for financial reporting purposes. This means that if a company chooses the LIFO method to reduce its tax bills, it will also have to report lower net income in its financial statements.**

We have seen that both inventory on the balance sheet and net income on the income statement are higher when companies use FIFO in a period of inflation. Yet, many companies have selected LIFO. Why? The reason is that LIFO results in the lowest income taxes (because of lower net income) during times of rising prices (see **Helpful Hint**). For example, at Houston Electronics, income taxes are $750 under LIFO, compared to $990 under FIFO. The tax savings of $240 makes more cash available for use in the business.

## Using Inventory Cost Flow Methods Consistently

Whatever cost flow method a company chooses, it should use that method consistently from one accounting period to another. This approach is often referred to as the **consistency concept**, which means that a company uses the same accounting principles and methods from year to year. Consistent application enhances the comparability of financial statements over successive time periods. In contrast, using the FIFO method one year and the LIFO method the next year would make it difficult to compare the net incomes of the two years.

Although consistent application is preferred, it does not mean that a company may never change its inventory costing method. When a company adopts a different method, it should disclose in the financial statements the change and its effects on net income. **Illustration 6.14** shows a typical disclosure, using information from recent financial statements of **Quaker Oats** (now a unit of **PepsiCo**).

**ILLUSTRATION 6.14**

**Disclosure of change in cost flow method**

Real World

**Quaker Oats**
**Notes to the Financial Statements**

**Note 1:** Effective July 1, the Company adopted the LIFO cost flow assumption for valuing the majority of U.S. Grocery Products inventories. The Company believes that the use of the LIFO method better matches current costs with current revenues. The effect of this change on the current year was to decrease net income by $16.0 million.

### International Insight ExxonMobil Corporation

Bloomberg/Getty Images

#### Is LIFO Fair?

**ExxonMobil Corporation**, like many U.S. companies, uses LIFO to value its inventory for financial reporting and tax purposes. In one year, this resulted in a cost of goods sold figure that was $5.6 billion higher than under FIFO. By increasing cost of goods sold, ExxonMobil reduces net income, which reduces taxes. Critics say that LIFO provides an unfair "tax dodge." As Congress looks for more sources of tax revenue, some lawmakers favor the elimination of LIFO. Supporters of LIFO argue that the method is conceptually sound because it matches current costs with current revenues. In addition, they point out that this matching provides protection against inflation.

International accounting standards do not allow the use of LIFO. Because of this, the net income of foreign oil companies such as **BP** and **Royal Dutch Shell** are not directly comparable to U.S. companies, which can make analysis difficult.

**Source:** David Reilly, "Big Oil's Accounting Methods Fuel Criticism," *Wall Street Journal* (August 8, 2006), p. C1.

**What are the arguments for and against the use of LIFO? (Go to WileyPLUS for this answer and additional questions.)**

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### DO IT! 2 | Cost Flow Methods

The accounting records of Shumway Ag Implements show the following data.

| | |
|---|---|
| Beginning inventory | 4,000 units at $ 3 |
| Purchases | 6,000 units at $ 4 |
| Sales | 7,000 units at $12 |

Determine the cost of goods sold during the period under a periodic inventory system using (a) the FIFO method, (b) the LIFO method, and (c) the average-cost method.

**ACTION PLAN**

- Understand the periodic inventory system.
- Allocate costs between goods sold and goods on hand (ending inventory) for each cost flow method.
- Compute cost of goods sold for each method.

**Solution**

Cost of goods available for sale = (4,000 × $3) + (6,000 × $4) = $36,000
Ending inventory = 10,000 − 7,000 = 3,000 units

**a.** FIFO: $36,000 − (3,000 × $4) = $24,000

**b.** LIFO: $36,000 − (3,000 × $3) = $27,000

**c.** Average cost per unit: [(4,000 @ $3) + (6,000 @ $4)] ÷ 10,000 = $3.60
Average-cost: $36,000 − (3,000 × $3.60) = $25,200

Related exercise material: **BE6.3, BE6.4, BE6.5, BE6.6, DO IT! 6.2, E6.4, E6.5, E6.6, E6.7, E6.8, and E6.9.**

# Effects of Inventory Errors

**LEARNING OBJECTIVE 3**

Indicate the effects of inventory errors on the financial statements.

Unfortunately, errors occasionally occur in accounting for inventory. In some cases, errors are caused by failure to count or price the inventory correctly. In other cases, errors occur because companies do not properly recognize the transfer of legal title to goods that are in transit. When errors occur, they affect both the income statement and the balance sheet.

## Income Statement Effects

The ending inventory of one period automatically becomes the beginning inventory of the next period. Thus, inventory errors affect the computation of cost of goods sold and net income in two periods.

The effects on cost of goods sold can be computed by first entering incorrect data in the formula in Illustration 6.15 and then substituting the correct data.

| Beginning Inventory | + | Cost of Goods Purchased | − | Ending Inventory | = | Cost of Goods Sold |
|---|---|---|---|---|---|---|

**ILLUSTRATION 6.15**
**Formula for cost of goods sold**

If **beginning** inventory is understated, cost of goods sold will be understated. If **ending** inventory is understated, cost of goods sold will be overstated. Illustration 6.16 shows the effects of inventory errors on the current year's income statement.

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**ILLUSTRATION 6.16**
**Effects of inventory errors on current year's income statement**

| When Inventory Error: | Cost of Goods Sold Is: | Net Income Is: |
|---|---|---|
| Understates beginning inventory | Understated | Overstated |
| Overstates beginning inventory | Overstated | Understated |
| Understates ending inventory | Overstated | Understated |
| Overstates ending inventory | Understated | Overstated |

**ETHICS NOTE**

**Inventory fraud increases during recessions. Such fraud includes pricing inventory at amounts in excess of its actual value, or claiming to have inventory when no inventory exists. Inventory fraud usually overstates ending inventory, thereby understating cost of goods sold and creating higher income.**

An error in the ending inventory of the current period will have a **reverse effect on net income of the next accounting period**. Illustration 6.17 shows this effect. Note that the understatement of ending inventory in 2019 results in an understatement of beginning inventory in 2020 and an overstatement of net income in 2020.

Over the two years, though, total net income is correct because the errors **offset each other**. Notice that total income using incorrect data is $35,000 ($22,000 + $13,000), which is the same as the total income of $35,000 ($25,000 + $10,000) using correct data. Also note in this example that an error in the beginning inventory does not result in a corresponding error in the ending inventory for that period. The correctness of the ending inventory depends entirely on the accuracy of taking and costing the inventory at the balance sheet date under the periodic inventory system (see Ethics Note).

**ILLUSTRATION 6.17** **Effects of inventory errors on two years' income statements**

**Sample Company**
**Condensed Income Statements**

| | 2019 | | 2020 | |
|---|---|---|---|---|
| | Incorrect | Correct | Incorrect | Correct |
| Sales revenue | $80,000 | $80,000 | $90,000 | $90,000 |
| Beginning inventory | $ 20,000 | $20,000 | **$12,000** | **$15,000** |
| Cost of goods purchased | 40,000 | 40,000 | 68,000 | 68,000 |
| Cost of goods available for sale | 60,000 | 60,000 | 80,000 | 83,000 |
| Ending inventory | **12,000** | **15,000** | 23,000 | 23,000 |
| Cost of goods sold | 48,000 | 45,000 | 57,000 | 60,000 |
| Gross profit | 32,000 | 35,000 | 33,000 | 30,000 |
| Operating expenses | 10,000 | 10,000 | 20,000 | 20,000 |
| Net income | $22,000 | $25,000 | $13,000 | $10,000 |

**$(3,000)** Net income understated

**$3,000** Net income overstated

**The errors cancel. Thus, the combined total income for the 2-year period is correct.**

## Balance Sheet Effects

Companies can determine the effect of ending inventory errors on the balance sheet by using the basic accounting equation: Assets = Liabilities + Owner's Equity. Errors in the ending inventory have the effects shown in Illustration 6.18.

**ILLUSTRATION 6.18**
**Effects of ending inventory errors on balance sheet**

| Ending Inventory Error | Assets | Liabilities | Owner's Equity |
|---|---|---|---|
| Overstated | Overstated | No effect | Overstated |
| Understated | Understated | No effect | Understated |

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The effect of an error in ending inventory on the subsequent period was shown in Illustration 6.17. Note that if the error is not corrected, the combined total net income for the two periods would be correct. Thus, total owner's equity reported on the balance sheet at the end of 2020 will also be correct.

### DO IT! 3 | Inventory Errors

Visual Company overstated its 2019 ending inventory by $22,000. Determine the impact this error has on ending inventory, cost of goods sold, and owner's equity in 2019 and 2020.

**ACTION PLAN**

- An ending inventory error in one period will have an equal and opposite effect on cost of goods sold and net income in the next period.
- After two years, the errors have offset each other.

**Solution**

| | 2019 | 2020 |
|---|---|---|
| Ending inventory | $22,000 overstated | No effect |
| Cost of goods sold | $22,000 understated | $22,000 overstated |
| Owner's equity | $22,000 overstated | No effect |

Related exercise material: **BE6.7, DO IT! 6.3, E6.10, and E6.11.**

# Inventory Statement Presentation and Analysis

**LEARNING OBJECTIVE 4**

Explain the statement presentation and analysis of inventory.

## Presentation

As indicated in Chapter 5, inventory is classified in the balance sheet as a current asset immediately below receivables. In a multiple-step income statement, cost of goods sold is subtracted from net sales. There also should be disclosure of (1) the major inventory classifications, (2) the basis of accounting (cost, or lower-of-cost-or-net realizable value), and (3) the cost method (FIFO, LIFO, or average-cost).

## Lower-of-Cost-or-Net Realizable Value

The value of inventory for companies selling high-technology or fashion goods can drop very quickly due to continual changes in technology or fashions. These circumstances sometimes call for inventory valuation methods other than those presented so far. For example, purchasing managers at **Ford** at one time decided to make a large purchase of palladium, a precious metal used in vehicle emission devices. They made this purchase because they feared a future shortage. The shortage did not materialize, and by the end of the year the price of palladium had plummeted. Ford's inventory was then worth $1 billion less than its original cost. Do you think Ford's inventory should have been stated at cost, in accordance with the historical cost principle, or at its lower net realizable value?

As you probably reasoned, this situation requires a departure from the cost basis of accounting. When the value of inventory is lower than its cost, companies must "write down" the inventory to its net realizable value. This is done by valuing the inventory at the **lower-of-cost-or-net realizable value (LCNRV)** in the period in which the price decline occurs. LCNRV is an example of the accounting concept of **conservatism**, which means

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that the best choice among accounting alternatives is the method that is least likely to overstate assets and net income.

Under the LCNRV basis, **net realizable value** refers to the net amount that a company excepts to realize (receive) from the sale of inventory. Specifically, net realizable value is the estimated selling price in the normal course of business, less estimated costs to complete and sell.

Companies apply LCNRV to the items in inventory after they have used one of the inventory costing methods (specific identification, FIFO, or average-cost) to determine cost.[2] To illustrate the application of LCNRV, assume that Ken Tuckie TV has the following lines of merchandise with costs and net realizable values as indicated. LCNRV produces the results shown in **Illustration 6.19**. Note that the amounts shown in the final column are the lower-of-cost-or-net realizable value amounts for each item.

**ILLUSTRATION 6.19**
**Computation of lower-of-cost-or-net realizable value**

| | Units | Cost per Unit | Net Realizable Value per Unit | Lower-of-Cost-or-Net Realizable Value | |
|---|---|---|---|---|---|
| Flat-screen TVs | 100 | $600 | $550 | $ 55,000 | ($550 × 100) |
| Satellite radios | 500 | 90 | 104 | 45,000 | ($90 × 500) |
| DVD recorders | 850 | 50 | 48 | 40,800 | ($48 × 850) |
| DVDs | 3,000 | 5 | 6 | 15,000 | ($5 × 3,000) |
| Total inventory | | | | $155,800 | |

## Analysis

The amount of inventory carried by a company has significant economic consequences. And inventory management is a double-edged sword that requires constant attention. On the one hand, management wants to have a great variety and quantity available so that customers have a wide selection and items are always in stock. But, such a policy may incur high carrying costs (e.g., investment, storage, insurance, obsolescence, and damage). On the other hand, low inventory levels lead to stock-outs and lost sales. Common ratios used to manage and evaluate inventory levels are inventory turnover and a related measure, days in inventory.

**Inventory turnover** measures the number of times on average the inventory is sold during the period. Its purpose is to measure the liquidity of the inventory. The inventory turnover is computed by dividing cost of goods sold by the average inventory during the period. Unless seasonal factors are significant, average inventory can be computed from the beginning and ending inventory balances. For example, **Wal-Mart** reported in its January 31, 2016, annual report a beginning inventory of $45,141 million, an ending inventory of $44,469 million, and cost of goods sold for the year ended January 31, 2016, of $360,984 million. The inventory turnover formula and computation for Wal-Mart are shown in **Illustration 6.20**.

**ILLUSTRATION 6.20**
**Inventory turnover formula and computation for Wal-Mart**

| Cost of Goods Sold | ÷ | Average Inventory | = | Inventory Turnover |
|---|---|---|---|---|
| $360,984 | ÷ | $\frac{\$44,469 + \$45,141}{2}$ | = | 8.1 times |

A variant of the inventory turnover is **days in inventory**. This measures the average number of days inventory is held. It is calculated as 365 divided by the inventory turnover. For example, Wal-Mart's inventory turnover of 8.1 times divided into 365 is approximately 45.1 days. This is the approximate time that it takes a company to sell the inventory once it arrives at the store.

[2]Special rules apply to companies that use LIFO, which are discussed in more advanced courses.

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There are typical levels of inventory in every industry. Companies that are able to keep their inventory at lower levels and higher turnovers and still satisfy customer needs are the most successful.

## Accounting Across the Organization Sony

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### Too Many TVs or Too Few?

Financial analysts closely monitor the inventory management practices of companies. For example, some analysts following **Sony** expressed concern because the company built up its inventory of televisions in an attempt to sell 25 million liquid crystal display (LCD) TVs—a 60% increase over the prior year. A year earlier, Sony had cut its inventory levels so that its quarterly days in inventory was down to 38 days, compared to 61 days for the same quarter a year before that. But in the next year, as a result of its inventory build-up, days in inventory rose to 59 days. Management said that it didn't think that Sony's inventory levels were too high. However, analysts were concerned that the company would have to engage in very heavy discounting in order to sell off its inventory. Analysts noted that the losses from discounting can be "punishing."

**Source:** Daisuke Wakabayashi, "Sony Pledges to Corral Inventory," *Wall Street Journal* Online (November 2, 2010).

**For Sony, what are the advantages and disadvantages of having a low days in inventory measure? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 4 | LCNRV and Inventory Turnover

**a.** Tracy Company sells three different types of home heating stoves (gas, wood, and pellet). The cost and net realizable value of its inventory of stoves are as follows.

| | Cost | Net Realizable Value |
|---|---|---|
| Gas | $ 84,000 | $ 79,000 |
| Wood | 250,000 | 280,000 |
| Pellet | 112,000 | 101,000 |

Determine the value of the company's inventory under the lower-of-cost-or-net realizable value approach.

**ACTION PLAN**

- Determine whether cost or net realizable value is lower for each inventory type.
- Sum the lowest value of each inventory type to determine the total value of inventory.

### Solution

The lowest value for each inventory type is gas $79,000, wood $250,000, and pellet $101,000. The total inventory value is the sum of these amounts, $430,000.

**b.** Early in 2020, Westmoreland Company switched to a just-in-time inventory system. Its sales revenue, cost of goods sold, and inventory amounts for 2019 and 2020 are shown below.

| | 2019 | 2020 |
|---|---|---|
| Sales revenue | $2,000,000 | $1,800,000 |
| Cost of goods sold | 1,000,000 | 910,000 |
| Beginning inventory | 290,000 | 210,000 |
| Ending inventory | 210,000 | 50,000 |

Determine the inventory turnover and days in inventory for 2019 and 2020. Discuss the changes in the amount of inventory, the inventory turnover and days in inventory, and the amount of sales across the two years.

**ACTION PLAN**

- To find the inventory turnover, divide cost of goods sold by average inventory.
- To determine days in inventory, divide 365 days by the inventory turnover.

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**Solution**

| | 2019 | | 2020 | |
|---|---|---|---|---|
| Inventory turnover | $1,000,000 / ($290,000 + $210,000)/2 | = 4 | $910,000 / ($210,000 + $50,000)/2 | = 7 |
| Days in inventory | 365 ÷ 4 = 91.3 days | | 365 ÷ 7 = 52.1 days | |

The company experienced a very significant decline in its ending inventory as a result of the just-in-time inventory. This decline improved its inventory turnover and its days in inventory. However, its sales declined by 10%. It is possible that this decline was caused by the dramatic reduction in the amount of inventory that was on hand, which increased the likelihood of "stock-outs." To determine the optimal inventory level, management must weigh the benefits of reduced inventory against the potential lost sales caused by stock-outs.

Related exercise material: **BE6.8, BE6.9, DO IT! 6.4, E6.12, E6.13, E6.14, and E6.15.**

**ACTION PLAN (CONT.)**

- **Just-in-time inventory reduces the amount of inventory on hand, which reduces carrying costs. Reducing inventory levels by too much has potential negative implications for sales.**

# Appendix 6A Inventory Methods and the Perpetual System

**LEARNING OBJECTIVE *5**

Apply the inventory cost flow methods to perpetual inventory records.

What inventory cost flow methods can companies employ if they use a perpetual inventory system? Simple—they can use any of the inventory cost flow methods described in the chapter. To illustrate the application of the three assumed cost flow methods (FIFO, LIFO, and average-cost), we will use the data shown in Illustration 6A.1 and in this chapter for Houston Electronics' Astro condensers.

**ILLUSTRATION 6A.1**
**Inventoriable units and costs**

**Houston Electronics**
**Astro Condensers**

| Date | Explanation | Units | Unit Cost | Total Cost | Balance in Units |
|---|---|---|---|---|---|
| 1/1 | Beginning inventory | 100 | $10 | $ 1,000 | 100 |
| 4/15 | Purchases | 200 | 11 | 2,200 | 300 |
| 8/24 | Purchases | 300 | 12 | 3,600 | 600 |
| 9/10 | Sale | 550 | | | 50 |
| 11/27 | Purchases | 400 | 13 | 5,200 | 450 |
| | | | | $12,000 | |

## First-In, First-Out (FIFO)

Under perpetual FIFO, the company charges to cost of goods sold the cost of the earliest goods on hand **prior to each sale**. Therefore, the cost of goods sold on September 10 consists of the units on hand January 1 and the units purchased April 15 and August 24. Illustration 6A.2 shows the inventory under a FIFO method perpetual system.

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**ILLUSTRATION 6A.2**
**Perpetual system—FIFO**

| Date | Purchases | | Cost of Goods Sold | Balance (in units and cost) | |
|---|---|---|---|---|---|
| January 1 | | | | (100 @ $10) | $1,000 |
| April 15 | (200 @ $11) | $2,200 | | (100 @ $10)<br>(200 @ $11) | $3,200 |
| August 24 | (300 @ $12) | $3,600 | | (100 @ $10)<br>(200 @ $11)<br>(300 @ $12) | $6,800 |
| September 10 | | | (100 @ $10)<br>(200 @ $11)<br>(250 @ $12) | ( 50 @ $12) | $ 600 |
| | | | $6,200 | | Cost of goods sold |
| November 27 | (400 @ $13) | $5,200 | | ( 50 @ $12)<br>(400 @ $13) | $5,800 |
| | | | | | Ending inventory |

The ending inventory in this situation is $5,800, and the cost of goods sold is $6,200 [(100 @ $10) + (200 @ $11) + (250 @ $12)].

Compare Illustrations 6.6 and 6A.2. You can see that the results under FIFO in a perpetual system are the **same as in a periodic system**. In both cases, the ending inventory is $5,800 and cost of goods sold is $6,200. Regardless of the system, the first costs in are the costs assigned to cost of goods sold.

## Last-In, First-Out (LIFO)

Under the LIFO method using a perpetual system, the company charges to cost of goods sold the cost of the most recent purchase prior to sale. Therefore, the cost of the goods sold on September 10 consists of all the units from the August 24 and April 15 purchases plus 50 of the units in beginning inventory. **Illustration 6A.3** shows the computation of the ending inventory under the LIFO method.

**ILLUSTRATION 6A.3**
**Perpetual system—LIFO**

| Date | Purchases | | Cost of Goods Sold | Balance (in units and cost) | |
|---|---|---|---|---|---|
| January 1 | | | | (100 @ $10) | $1,000 |
| April 15 | (200 @ $11) | $2,200 | | (100 @ $10)<br>(200 @ $11) | $3,200 |
| August 24 | (300 @ $12) | $3,600 | | (100 @ $10)<br>(200 @ $11)<br>(300 @ $12) | $6,800 |
| September 10 | | | (300 @ $12)<br>(200 @ $11)<br>( 50 @ $10) | (50 @ $10) | $ 500 |
| | | | $6,300 | | Cost of goods sold |
| November 27 | (400 @ $13) | $5,200 | | (50 @ $10)<br>(400 @ $13) | $5,700 |
| | | | | | Ending inventory |

The use of LIFO in a perpetual system will usually produce cost allocations that differ from those using LIFO in a periodic system. In a perpetual system, the latest units purchased **prior to each sale** are allocated to cost of goods sold. In contrast, in a periodic system, the latest units purchased **during the period** are allocated to cost of goods sold. Thus, when a purchase is made after the last sale, the LIFO periodic system will apply this purchase to the previous sale.

See Illustration 6.9, which shows the proof that the 400 units at $13 purchased on November 27 applied to the sale of 550 units on September 10.

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Under the LIFO perpetual system in Illustration 6A.3, the 400 units at $13 purchased on November 27 are all applied to the ending inventory. The ending inventory in this LIFO perpetual illustration is $5,700, and cost of goods sold is $6,300, as compared to the LIFO periodic Illustration 6.8 where the ending inventory is $5,000 and cost of goods sold is $7,000.

## Average-Cost

The average-cost method in a perpetual inventory system is called the **moving-average method**. Under this method, the company computes a new average **after each purchase**, by dividing the cost of goods available for sale by the units on hand. The average cost is then applied to (1) the units sold, to determine the cost of goods sold, and (2) the remaining units on hand, to determine the ending inventory amount. **Illustration 6A.4** shows the application of the moving-average cost method by Houston Electronics (computations of the moving-average unit cost are shown after Illustration 6A.4).

**ILLUSTRATION 6A.4**
**Perpetual system—moving-average method**

| Date | Purchases | Cost of Goods Sold | Balance (in units and cost) |
|---|---|---|---|
| January 1 | | | (100 @ $10) $1,000 |
| April 15 | (200 @ $11) $2,200 | | (300 @ $10.667) $3,200 |
| August 24 | (300 @ $12) $3,600 | | (600 @ $11.333) $6,800 |
| September 10 | | (550 @ $11.333) | (50 @ $11.333) $ 567 |
| | | $6,233 | |
| November 27 | (400 @ $13) $5,200 | | (450 @ $12.816) $5,767 |

Cost of goods sold

Ending inventory

As indicated, Houston Electronics computes **a new average each time it makes a purchase**.

1. On April 15, after Houston buys 200 units for $2,200, a total of 300 units costing $3,200 ($1,000 + $2,200) are on hand. The average unit cost is $10.667 ($3,200 ÷ 300).
2. On August 24, after Houston buys 300 units for $3,600, a total of 600 units costing $6,800 ($1,000 + $2,200 + $3,600) are on hand. The average cost per unit is $11.333 ($6,800 ÷ 600).
3. On September 10, to compute cost of goods sold, Houston uses this unit cost of $11.333 until it makes another purchase, when the company computes a new unit cost. Accordingly, the unit cost of the 550 units sold on September 10 is $11.333, and the total cost of goods sold is $6,233.
4. On November 27, following the purchase of 400 units for $5,200, there are 450 units on hand costing $5,767 ($567 + $5,200) with a new average cost of $12.816 ($5,767 ÷ 450).

Compare this moving-average cost under the perpetual inventory system to Illustration 6.11, which shows the average-cost method under a periodic inventory system.

# Appendix 6B Estimating Inventories

**LEARNING OBJECTIVE *6**
Describe the two methods of estimating inventories.

In the chapter, we assumed that a company would be able to physically count its inventory. What if it cannot? What if the inventory were destroyed by fire or flood, for example? In that case, the company would use an estimate.

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Two circumstances explain why companies sometimes estimate inventories. First, a casualty such as fire, flood, or earthquake may make it impossible to take a physical inventory. Second, managers may want monthly or quarterly financial statements, but a physical inventory is taken only annually. The need for estimating inventories occurs primarily with a periodic inventory system because of the absence of perpetual inventory records.

There are two widely used methods of estimating inventories: (1) the gross profit method, and (2) the retail inventory method.

## Gross Profit Method

The **gross profit method** estimates the cost of ending inventory by applying a gross profit rate to net sales. This method is relatively simple but effective. Accountants, auditors, and managers frequently use the gross profit method to test the reasonableness of the ending inventory amount. It will detect large errors.

To use this method, a company needs to know its net sales, cost of goods available for sale, and gross profit rate. The company then can estimate its gross profit for the period. Illustration 6B.1 shows the formulas for using the gross profit method.

| | | | | | |
|---|---|---|---|---|---|
| **Step 1:** | **Net Sales** | **–** | **Estimated Gross Profit** | **=** | **Estimated Cost of Goods Sold** |
| **Step 2:** | **Cost of Goods Available for Sale** | **–** | **Estimated Cost of Goods Sold** | **=** | **Estimated Cost of Ending Inventory** |

**ILLUSTRATION 6B.1**
**Gross profit method formulas**

To illustrate, assume that Kishwaukee Company wishes to prepare an income statement for the month of January. Its records show net sales of $200,000, beginning inventory $40,000, and cost of goods purchased $120,000. In the preceding year, the company realized a 30% gross profit rate. It expects to earn the same rate this year. Given these facts and assumptions, Kishwaukee can compute the estimated cost of the ending inventory at January 31 under the gross profit method as shown in Illustration 6B.2.

| | |
|---|---|
| **Step 1:** | |
| Net sales | $200,000 |
| Less: Estimated gross profit (30% × $200,000) | 60,000 |
| **Estimated cost of goods sold** | **$140,000** |
| **Step 2:** | |
| Beginning inventory | $ 40,000 |
| Cost of goods purchased | 120,000 |
| Cost of goods available for sale | 160,000 |
| Less: Estimated cost of goods sold | 140,000 |
| **Estimated cost of ending inventory** | **$ 20,000** |

**ILLUSTRATION 6B.2**
**Example of gross profit method**

The gross profit method is based on the assumption that the gross profit rate will remain constant. But, it may not remain constant, due to a change in merchandising policies or in market conditions. In such cases, the company should adjust the rate to reflect current operating conditions. In some cases, companies can obtain a more accurate estimate by applying this method on a department or product-line basis.

Note that companies should not use the gross profit method to prepare financial statements at the end of the year. These statements should be based on a physical inventory count.

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## Retail Inventory Method

A retail store such as **Home Depot**, **Ace Hardware**, or **Walmart** has thousands of different types of merchandise at low unit costs. In such cases, it is difficult and time-consuming to apply unit costs to inventory quantities. An alternative is to use the **retail inventory method** to estimate the cost of inventory. Most retail companies can establish a relationship between cost and sales price. The company then applies the cost-to-retail percentage to the ending inventory at retail prices to determine inventory at cost.

Under the retail inventory method, a company's records must show both the cost and retail value of the goods available for sale. **Illustration 6B.3** presents the formulas for using the retail inventory method.

**ILLUSTRATION 6B.3**
**Retail inventory method formulas**

| | | | | | |
|---|---|---|---|---|---|
| **Step 1:** | **Goods Available for Sale at Retail** | **−** | **Net Sales** | **=** | **Ending Inventory at Retail** |
| **Step 2:** | **Goods Available for Sale at Cost** | **÷** | **Goods Available for Sale at Retail** | **=** | **Cost-to-Retail Ratio** |
| **Step 3:** | **Ending Inventory at Retail** | **×** | **Cost-to-Retail Ratio** | **=** | **Estimated Cost of Ending Inventory** |

We can demonstrate the logic of the retail method by using unit-cost data. Assume that Ortiz Inc. has marked 10 units purchased at $7 to sell for $10 per unit. Thus, the cost-to-retail ratio is 70% ($70 ÷ $100). If four units remain unsold, their retail value is $40 (4 × $10), and their cost is $28 ($40 × 70%). This amount agrees with the total cost of goods on hand on a per unit basis (4 × $7).

**Illustration 6B.4** shows application of the retail method for Valley West. Note that it is not necessary to take a physical inventory to determine the estimated cost of goods on hand at any given time.

**ILLUSTRATION 6B.4**
**Application of retail inventory method**

| | At Cost | At Retail |
|---|---|---|
| Beginning inventory | $14,000 | $ 21,500 |
| Goods purchased | 61,000 | 78,500 |
| Goods available for sale | $75,000 | 100,000 |
| Less: Net sales | | 70,000 |
| **Step (1) Ending inventory at retail =** | | **$ 30,000** |

**Step (2) Cost-to-retail ratio = $75,000 ÷ $100,000 = 75%**
**Step (3) Estimated cost of ending inventory = $30,000 × 75% = $22,500**

**HELPFUL HINT**
**In determining inventory at retail, companies use selling prices of the units.**

The retail inventory method also facilitates taking a physical inventory at the end of the year. Valley West can value the goods on hand at the prices marked on the merchandise, and then apply the cost-to-retail ratio to the goods on hand at retail to determine the ending inventory at cost (see **Helpful Hint**).

The major disadvantage of the retail method is that it is an averaging technique. Thus, it may produce an incorrect inventory valuation if the mix of the ending inventory is not representative of the mix in the goods available for sale. Assume, for example, that the cost-to-retail ratio of 75% for Valley West consists of equal proportions of inventory items that have cost-to-retail ratios of 70%, 75%, and 80%. If the ending inventory contains only items with a 70% ratio, an incorrect inventory cost will result. Companies can minimize this problem by applying the retail method on a department or product-line basis.

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# Review and Practice

## Learning Objectives Review

### 1 Discuss how to classify and determine inventory.

Merchandisers need only one inventory classification, merchandise inventory, to describe the different items that make up total inventory. Manufacturers, on the other hand, usually classify inventory into three categories: finished goods, work in process, and raw materials. To determine inventory quantities, manufacturers (1) take a physical inventory of goods on hand and (2) determine the ownership of goods in transit or on consignment.

### 2 Apply inventory cost flow methods and discuss their financial effects.

The primary basis of accounting for inventories is cost. Cost of goods available for sale includes (a) cost of beginning inventory and (b) cost of goods purchased. The inventory cost flow methods are specific identification and three assumed cost flow methods—FIFO, LIFO, and average-cost.

When prices are rising, the first-in, first-out (FIFO) method results in lower cost of goods sold and higher net income than the other methods. The last-in, first-out (LIFO) method results in the lowest income taxes. The reverse is true when prices are falling. In the balance sheet, FIFO results in an ending inventory that is closest to current value. Inventory under LIFO is the farthest from current value.

### 3 Indicate the effects of inventory errors on the financial statements.

In the income statement of the current year: (a) If beginning inventory is understated, net income is overstated. The reverse occurs if beginning inventory is overstated. (b) If ending inventory is overstated, net income is overstated. If ending inventory is understated, net income is understated. In the following period, its effect on net income for that period is reversed, and total net income for the two years will be correct.

In the balance sheet: Ending inventory errors will have the same effect on total assets and total owner's equity and no effect on liabilities.

### 4 Explain the statement presentation and analysis of inventory.

Inventory is classified in the balance sheet as a current asset immediately below receivables. There also should be disclosure of (1) the major inventory classifications, (2) the basis of accounting, and (3) the cost method.

Companies use the lower-of-cost-or-net realizable value (LCNRV) basis when the net realizable value is less than cost. Under LCNRV, companies recognize the loss in the period in which the price decline occurs.

The inventory turnover is cost of goods sold divided by average inventory. To convert it to average days in inventory, divide 365 days by the inventory turnover.

### *5 Apply the inventory cost flow methods to perpetual inventory records.

Under FIFO and a perpetual inventory system, companies charge to cost of goods sold the cost of the earliest goods on hand prior to each sale. Under LIFO and a perpetual system, companies charge to cost of goods sold the cost of the most recent purchase prior to sale. Under the moving-average (average-cost) method and a perpetual system, companies compute a new average cost after each purchase.

### *6 Describe the two methods of estimating inventories.

The two methods of estimating inventories are the gross profit method and the retail inventory method. Under the gross profit method, companies apply a gross profit rate to net sales to determine estimated gross profit and cost of goods sold. They then subtract estimated cost of goods sold from cost of goods available for sale to determine the estimated cost of the ending inventory.

Under the retail inventory method, companies compute a cost-to-retail ratio by dividing the cost of goods available for sale by the retail value of the goods available for sale. They then apply this ratio to the ending inventory at retail to determine the estimated cost of the ending inventory.

## Glossary Review

**Average-cost method** Inventory costing method that uses the weighted-average unit cost to allocate to ending inventory and cost of goods sold the cost of goods available for sale. (p. 6-11).

**Consigned goods** Goods held for sale by one party although ownership of the goods is retained by another party. (p. 6-6).

**Consistency concept** Dictates that a company use the same accounting principles and methods from year to year. (p. 6-14).

**Days in inventory** Measure of the average number of days inventory is held; calculated as 365 divided by inventory turnover. (p. 6-18).

**Finished goods inventory** Manufactured items that are completed and ready for sale. (p. 6-3).

**First-in, first-out (FIFO) method** Inventory costing method that assumes that the costs of the earliest goods purchased are the first to be recognized as cost of goods sold. (p. 6-9).

**FOB (free on board) destination** Freight terms indicating that ownership of the goods remains with the seller until the goods reach the buyer. (p. 6-5).

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**FOB (free on board) shipping point** Freight terms indicating that ownership of the goods passes to the buyer when the public carrier accepts the goods from the seller. (p. 6-5).

***Gross profit method** A method for estimating the cost of the ending inventory by applying a gross profit rate to net sales and subtracting estimated cost of goods sold from cost of goods available for sale. (p. 6-23).

**Inventory turnover** A ratio that measures the number of times on average the inventory sold during the period; computed by dividing cost of goods sold by the average inventory during the period. (p. 6-18).

**Just-in-time (JIT) inventory** Inventory system in which companies manufacture or purchase goods only when needed for use. (p. 6-3).

**Last-in, first-out (LIFO) method** Inventory costing method that assumes the costs of the latest units purchased are the first to be allocated to cost of goods sold. (p. 6-10).

**Lower-of-cost-or-net realizable value (LCNRV) basis** A basis whereby inventory is stated at the lower of either its cost or its net realizable value. (p. 6-17).

***Moving-average method** A new average is computed after each purchase, by dividing the cost of goods available for sale by the units on hand. (p. 6-22).

**Net realizable value** Net amount that a company expects to realize (receive) from the sale of inventory. Specifically, it is the estimated selling price in the normal course of business, less estimated costs to complete and sell. (p. 6-18)

**Raw materials** Basic goods that will be used in production but have not yet been placed into production. (p. 6-3).

***Retail inventory method** A method for estimating the cost of the ending inventory by applying a cost-to-retail ratio to the ending inventory at retail. (p. 6-24).

**Specific identification method** An actual physical flow costing method in which items still in inventory are specifically costed to arrive at the total cost of the ending inventory. (p. 6-7).

**Weighted-average unit cost** Average cost that is weighted by the number of units purchased at each unit cost. (p. 6-11).

**Work in process** That portion of manufactured inventory that has been placed into the production process but is not yet complete. (p. 6-3).

## Practice Multiple-Choice Questions

**1. (LO 1)** When is a physical inventory usually taken?

**a.** When the company has its greatest amount of inventory.
**b.** When a limited number of goods are being sold or received.
**c.** At the end of the company's fiscal year.
**d.** Both (b) and (c).

**2. (LO 1)** Which of the following should **not** be included in the physical inventory of a company?

**a.** Goods held on consignment from another company.
**b.** Goods shipped on consignment to another company.
**c.** Goods in transit from another company shipped FOB shipping point.
**d.** None of the above.

**3. (LO 1)** As a result of a thorough physical inventory, Railway Company determined that it had inventory worth $180,000 at December 31, 2020. This count did not take into consideration the following facts: Rogers Consignment store currently has goods worth $35,000 on its sales floor that belong to Railway but are being sold on consignment by Rogers. The selling price of these goods is $50,000. Railway purchased $13,000 of goods that were shipped on December 27, FOB destination, that will be received by Railway on January 3. Determine the correct amount of inventory that Railway should report.

**a.** $230,000. **c.** $228,000.
**b.** $215,000. **d.** $193,000.

**4. (LO 2)** Cost of goods available for sale consists of two elements: beginning inventory and

**a.** ending inventory.
**b.** cost of goods purchased.
**c.** cost of goods sold.
**d.** All of the answer choices are correct.

**5. (LO 2)** Poppins Company has the following:

| | Units | Unit Cost |
|---|---|---|
| Inventory, Jan. 1 | 8,000 | $11 |
| Purchase, June 19 | 13,000 | 12 |
| Purchase, Nov. 8 | 5,000 | 13 |

If 9,000 units are on hand at December 31, the cost of the ending inventory under FIFO is:

**a.** $99,000. **c.** $113,000.
**b.** $108,000. **d.** $117,000.

**6. (LO 2)** Using the data in Question 5, the cost of the ending inventory under LIFO is:

**a.** $113,000. **c.** $99,000.
**b.** $108,000. **d.** $100,000.

**7. (LO 2)** Hansel Electronics has the following:

| | Units | Unit Cost |
|---|---|---|
| Inventory, Jan. 1 | 5,000 | $ 8 |
| Purchase, April 2 | 15,000 | $10 |
| Purchase, Aug. 28 | 20,000 | $12 |

If Hansel has 7,000 units on hand at December 31, the cost of ending inventory under the average-cost method is:

**a.** $84,000. **c.** $56,000.
**b.** $70,000. **d.** $75,250.

**8. (LO 2)** In periods of rising prices, LIFO will produce:

**a.** higher net income than FIFO.
**b.** the same net income as FIFO.
**c.** lower net income than FIFO.
**d.** higher net income than average-cost.

**9. (LO 2)** Considerations that affect the selection of an inventory costing method do **not** include:

**a.** tax effects.
**b.** balance sheet effects.
**c.** income statement effects.
**d.** perpetual vs. periodic inventory system.

**10. (LO 3)** Falk Company's ending inventory is understated $4,000. The effects of this error on the current year's cost of goods sold and net income, respectively, are:

**a.** understated, overstated.
**b.** overstated, understated.

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**c.** overstated, overstated.

**d.** understated, understated.

**11.** **(LO 3)** Pauline Company overstated its inventory by $15,000 at December 31, 2019. It did not correct the error in 2019 or 2020. As a result, Pauline's owner's equity was:

**a.** overstated at December 31, 2019, and understated at December 31, 2020.

**b.** overstated at December 31, 2019, and properly stated at December 31, 2020.

**c.** understated at December 31, 2019, and understated at December 31, 2020.

**d.** overstated at December 31, 2019, and overstated at December 31, 2020.

**12.** **(LO 4)** The lower-of-cost-or-net realizable value rule for inventory is an example of the application of:

**a.** the conservatism convention.

**b.** the historical cost principle.

**c.** the materiality concept.

**d.** the economics entity assumption.

**13.** **(LO 4)** Norton Company purchased 1,000 widgets and has 200 widgets in its ending inventory at a cost of $91 each and a net realizable value of $80 each. The ending inventory under lower-of-cost-or-net realizable value is:

**a.** $91,000. **c.** $18,200.

**b.** $80,000. **d.** $16,000.

**14.** **(LO 4)** Santana Company had beginning inventory of $80,000, ending inventory of $110,000, cost of goods sold of $285,000, and sales of $475,000. Santana's days in inventory is:

**a.** 73 days. **c.** 102.5 days.

**b.** 121.7 days. **d.** 84.5 days.

**15.** **(LO 4)** Which of these would cause the inventory turnover to increase the most?

**a.** Increasing the amount of inventory on hand.

**b.** Keeping the amount of inventory on hand constant but increasing sales.

**c.** Keeping the amount of inventory on hand constant but decreasing sales.

**d.** Decreasing the amount of inventory on hand and increasing sales.

*__16.__ **(LO 5)** In a perpetual inventory system:

**a.** LIFO cost of goods sold will be the same as in a periodic inventory system.

**b.** average costs are a simple average of unit costs incurred.

**c.** a new average is computed under the average-cost method after each sale.

**d.** FIFO cost of goods sold will be the same as in a periodic inventory system.

*__17.__ **(LO 6)** King Company has sales of $150,000 and cost of goods available for sale of $135,000. If the gross profit rate is 30%, the estimated cost of the ending inventory under the gross profit method is:

**a.** $15,000. **c.** $45,000.

**b.** $30,000. **d.** $75,000.

## Solutions

**1.** **d.** A physical inventory is usually taken when a limited number of goods are being sold or received, and at the end of the company's fiscal year. Choice (a) is incorrect because a physical inventory count is usually taken when the company has the least, not greatest, amount of inventory. Choices (b) and (c) are correct, but (d) is the better answer.

**2.** **a.** Goods held on consignment should not be included because another company has title (ownership) to the goods. The other choices are incorrect because (b) goods shipped on consignment to another company and (c) goods in transit from another company shipped FOB shipping point should be included in a company's ending inventory. Choice (d) is incorrect because (a) is not included in the physical inventory.

**3.** **b.** The inventory held on consignment by Rogers should be included in Railway's inventory balance at cost ($35,000). The purchased goods of $13,000 should not be included in inventory until January 3 because the goods are shipped FOB destination. Therefore, the correct amount of inventory is $215,000 ($180,000 + $35,000), not (a) $230,000, (c) $228,000, or (d) $193,000.

**4.** **b.** Cost of goods available for sale consists of beginning inventory and cost of goods purchased, not (a) ending inventory or (c) cost of goods sold. Therefore, choice (d) All of the above is also incorrect.

**5.** **c.** Under FIFO, ending inventory will consist of 5,000 units from the Nov. 8 purchase and 4,000 units from the June 19 purchase. Therefore, ending inventory is (5,000 × $13) + (4,000 × $12) = $113,000, not (a) $99,000, (b) $108,000, or (d) $117,000.

**6.** **d.** Under LIFO, ending inventory will consist of 8,000 units from the inventory at Jan. 1 and 1,000 units from the June 19 purchase. Therefore, ending inventory is (8,000 × $11) + (1,000 × $12) = $100,000, not (a) $113,000, (b) $108,000, or (c) $99,000.

**7.** **d.** Under the average-cost method, total cost of goods available for sale needs to be calculated in order to determine average cost per unit. The total cost of goods available is $430,000 = (5,000 × $8) + (15,000 × $10) + (20,000 × $12). The average cost per unit = ($430,000/40,000 total units available for sale) = $10.75. Therefore, ending inventory is ($10.75 × 7,000) = $75,250, not (a) $84,000, (b) $70,000, or (c) $56,000.

**8.** **c.** In periods of rising prices, LIFO will produce lower net income than FIFO, not (a) higher than FIFO or (b) the same as FIFO. Choice (d) is incorrect because in periods of rising prices, LIFO will produce lower net income than average-cost. LIFO therefore charges the highest inventory cost against revenues in a period of rising prices.

**9.** **d.** Perpetual vs. periodic inventory system is not one of the factors that affect the selection of an inventory costing method. The other choices are incorrect because (a) tax effects, (b) balance sheet effects, and (c) income statement effects all affect the selection of an inventory costing method.

**10.** **b.** Because ending inventory is too low, cost of goods sold will be too high (overstated) and since cost of goods sold (an expense) is too high, net income will be too low (understated). Therefore, the other choices are incorrect.

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**11. b.** Owner's equity is overstated by $15,000 at December 31, 2019, and is properly stated at December 31, 2020. An ending inventory error in one period will have an equal and opposite effect on cost of goods sold and net income in the next period; after two years, the errors have offset each other. The other choices are incorrect because owner's equity (a) is properly stated, not understated, at December 31, 2020; (c) is overstated, not understated, by $15,000 at December 31, 2019, and is properly stated, not understated, at December 31, 2020; and (d) is properly stated at December 31, 2020, not overstated.

**12. a.** Conservatism means to use the lowest value for assets and revenues when in doubt. The other choices are incorrect because (b) historical cost means that companies value assets at the original cost, (c) materiality means that an amount is large enough to affect a decision-maker, and (d) economic entity means to keep the company's transactions separate from the transactions of other entities.

**13. d.** Under the LCNRV basis, net realizable value is defined as the estimated selling price in the normal course of business, less estimated costs to complete and sell. Therefore, ending inventory would be valued at 200 widgets × $80 each = $16,000 not (a) $91,000, (b) $80,000, or (c) $18,200.

**14. b.** Santana's days in inventory = 365/Inventory turnover = 365/[$285,000/($80,000 + $110,000)/2)] = 121.7 days, not (a) 73 days, (c) 102.5 days, or (d) 84.5 days.

**15. d.** Decreasing the amount of inventory on hand will cause the denominator to decrease, causing inventory turnover to increase. Increasing sales will cause the numerator of the ratio to increase (higher sales means higher COGS), thus causing inventory turnover to increase even more. The other choices are incorrect because (a) increasing the amount of inventory on hand causes the denominator of the ratio to increase while the numerator stays the same, causing inventory turnover to decrease; (b) keeping the amount of inventory on hand constant but increasing sales will cause inventory turnover to increase because the numerator of the ratio will increase (higher sales means higher COGS) while the denominator stays the same, which will result in a lesser inventory increase than decreasing amount of inventory on hand and increasing sales; and (c) keeping the amount of inventory on hand constant but decreasing sales will cause inventory turnover to decrease because the numerator of the ratio will decrease (lower sales means lower COGS) while the denominator stays the same.

***16. d.** FIFO cost of goods sold is the same under both a periodic and a perpetual inventory system. The other choices are incorrect because (a) LIFO cost of goods sold is not the same under a periodic and a perpetual inventory system; (b) average costs are based on a moving average of unit costs, not an average of unit costs; and (c) a new average is computed under the average-cost method after each purchase, not sale.

***17. b.** COGS = Sales ($150,000) − Gross profit ($150,000 × 30%) = $105,000. Ending inventory = Cost of goods available for sale ($135,000) − COGS ($105,000) = $30,000, not (a) $15,000, (c) $45,000, or (d) $75,000.

## Practice Brief Exercises

*Compute ending inventory using FIFO and LIFO.*

**1. (LO 2)** In its first month of operations, Moncada Company made three purchases of merchandise in the following sequence: (1) 200 units at $7, (2) 300 units at $8, and (3) 150 units at $9. Assuming there are 220 units on hand, compute the cost of the ending inventory under the (a) FIFO method and (b) LIFO method. Moncada uses a periodic inventory system.

### Solution

**1. a.** The ending inventory under FIFO consists of (150 units at $9) + (70 units at $8) for a total allocation of $1,910 ($1,350 + $560).

**b.** The ending inventory under LIFO consists of (200 units at $7) + (20 units at $8) for a total allocation of $1,560 ($1,400 + $160).

*Determine correct income statement amounts.*

**2. (LO 3)** **Financial Statement** Avisail Company reports net income of $80,000 in 2020. However, ending inventory was overstated $9,000. What is the correct net income for 2020? What effect, if any, will this error have on total assets as reported in the balance sheet at December 31, 2020?

### Solution

**2.** The overstatement of ending inventory caused cost of goods sold to be understated $9,000 and net income to be overstated $9,000. The correct net income for 2020 is $71,000 ($80,000 − $9,000). Total assets in the balance sheet will be overstated by the amount that ending inventory is overstated, $9,000.

*Compute inventory turnover and days in inventory.*

**3. (LO 4)** At December 31, 2020, the following information was available for Garcia Company: ending inventory $30,000, beginning inventory $42,000, cost of goods sold $240,000, and sales revenue $400,000. Calculate inventory turnover and days in inventory for Garcia Company.

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### Solution

3. Inventory turnover: $\frac{\$240{,}000}{(\$30{,}000 + \$42{,}000)/2} = \frac{\$240{,}000}{\$36{,}000} = 6.67$

Days in inventory: $\frac{365}{6.67} = 54.7 \text{ days}$

## Practice Exercises

**1. (LO 1)** Matt Clark, an auditor with Grant CPAs, is performing a review of Parson Company's inventory account. Parson did not have a good year and top management is under pressure to boost reported income. According to its records. the inventory balance at year-end was $600,000. However, the following information was not considered when determining that amount.

*Determine the correct inventory amount.*

1. The physical count did not include goods purchased by Parson with a cost of $30,000 that were shipped FOB destination on December 28 and did not arrive at Parson's warehouse until January 3.
2. Included in the company's count were goods with a cost of $150,000 that the company is holding on consignment. The goods belong to Alvarez Corporation.
3. Included in the inventory account was $21,000 of office supplies that were stored in the warehouse and were to be used by the company's supervisors and managers during the coming year.
4. The company received an order on December 28 that was boxed and was sitting on the loading dock awaiting pick-up on December 31. The shipper picked up the goods on January 1 and delivered them on January 6. The shipping terms were FOB shipping point. The goods had a selling price of $29,000 and a cost of $19,000. The goods were not included in the count because they were sitting on the dock.
5. On December 29, Parson shipped goods with a selling price of $56,000 and a cost of $40,000 to Decco Corporation FOB shipping point. The goods arrived on January 3. Decco had only ordered goods with a selling price of $10,000 and a cost of $6,000. However, a Parson's sales manager had authorized the shipment and said that if Decco wanted to ship the goods back next week, it could.
6. Included in the count was $27,000 of goods that were parts for a machine that the company no longer made. Given the high-tech nature of Parson's products, it was unlikely that these obsolete parts had any other use. However, management would prefer to keep them on the books at cost, "since that is what we paid for them, after all."

#### Instructions

Prepare a schedule to determine the correct inventory amount. Provide explanations for each item above, saying why you did or did not make an adjustment for each item.

### Solution

| | |
|---|---|
| 1. Ending inventory—as reported | $600,000 |
| 1. No effect—title does not pass to Parson until goods are received (Jan. 3). | 0 |
| 2. Subtract from inventory: The goods belong to Alvarez Corporation. Parson is merely holding them for Alvarez. | (150,000) |
| 3. Subtract from inventory: Office supplies should be carried in a separate account. They are not considered inventory held for resale. | (21,000) |
| 4. Add to inventory: The goods belong to Parson until they are shipped (Jan. 1). | 19,000 |
| 5. Add to inventory: Decco ordered goods with a cost of $6,000. Parson should record the corresponding sales revenue of $10,000. Parson's decision to ship extra "unordered" goods does not constitute a sale. The manager's statement that Decco could ship the goods back indicates that Parson knows this overshipment is not a legitimate sale. The manager acted unethically in an attempt to improve Parson's reported income by overshipping. | 34,000 |
| 6. Subtract from inventory: GAAP require that inventory be valued at the lower-of-cost-or-net realizable value. Obsolete parts should be adjusted from cost to zero if they have no other use. | (27,000) |
| Correct inventory | $455,000 |

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*Determine effects of inventory errors.*

**2. (LO 3)** Rhode Software reported cost of goods sold as follows.

| | 2019 | 2020 |
|---|---|---|
| Beginning inventory | $ 27,000 | $ 40,000 |
| Cost of goods purchased | 200,000 | 235,000 |
| Cost of goods available for sale | 227,000 | 275,000 |
| Ending inventory | 40,000 | 45,000 |
| Cost of goods sold | $187,000 | $230,000 |

Rhode made two errors: (1) 2019 ending inventory was overstated $4,000, and (2) 2020 ending inventory was understated $9,000.

**Instructions**

Compute the correct cost of goods sold for each year.

**Solution**

**2.**

| | 2019 | 2020 |
|---|---|---|
| Beginning inventory | $ 27,000 | $ 36,000 |
| Cost of goods purchased | 200,000 | 235,000 |
| Cost of goods available for sale | 227,000 | 271,000 |
| Corrected ending inventory | (36,000)[a] | (54,000)[b] |
| Cost of goods sold | $191,000 | $217,000 |

[a]$40,000 − $4,000 = $36,000; [b]$45,000 + $9,000 = $54,000

*Determine LCNRV valuation.*

**3. (LO 4)** Creve Couer Camera uses the lower-of-cost-or-net realizable value basis for its inventory. The following data are available at December 31.

| | Units | Cost per Unit | Net Realizable Value per Unit |
|---|---|---|---|
| Cameras: | | | |
| Minolta | 5 | $160 | $156 |
| Canon | 7 | 145 | 153 |
| Light Meters: | | | |
| Vivitar | 12 | 120 | 114 |
| Kodak | 10 | 130 | 142 |

**Instructions**

What amount should be reported on Creve Couer Camera's financial statements, assuming the lower-of-cost-or-net realizable value rule is applied?

**Solution**

**3.**

| | Cost per Unit | Net Realizable Value per Unit | Lower-of-Cost or-Net Realizable Value | Units | Inventory at Lower-of-Cost-or-Net Realizable Value |
|---|---|---|---|---|---|
| Cameras: | | | | | |
| Minolta | $160 | $156 | $156 | 5 | $ 780 |
| Canon | 145 | 153 | 145 | 7 | 1,015 |
| Light Meters: | | | | | |
| Vivitar | 120 | 114 | 114 | 12 | 1,368 |
| Kodak | 130 | 142 | 130 | 10 | 1,300 |
| Total | | | | | $4,463 |

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## Practice Problems

**1. (LO 2)** Englehart Company has the following inventory, purchases, and sales data for the month of March.

*Compute inventory and cost of goods sold using three cost flow methods in a periodic inventory system.*

| | | | |
|---|---|---|---|
| Inventory: | March 1 | 200 units @ $4.00 | $ 800 |
| Purchases: | March 10 | 500 units @ $4.50 | 2,250 |
| | March 20 | 400 units @ $4.75 | 1,900 |
| | March 30 | 300 units @ $5.00 | 1,500 |
| Sales: | March 15 | 500 units | |
| | March 25 | 400 units | |

The physical inventory count on March 31 shows 500 units on hand.

### Instructions

Under a **periodic inventory system**, determine the cost of inventory on hand at March 31 and the cost of goods sold for March under (a) FIFO, (b) LIFO, and (c) average-cost. (For average-cost, carry cost per unit to three decimal places.)

### Solution

**1.** The cost of goods available for sale is $6,450, as follows.

| | | | |
|---|---|---|---|
| Inventory: | | 200 units @ $4.00 | $ 800 |
| Purchases: | March 10 | 500 units @ $4.50 | 2,250 |
| | March 20 | 400 units @ $4.75 | 1,900 |
| | March 30 | 300 units @ $5.00 | 1,500 |
| Total goods available for sale | | | $6,450 |

**a.** **FIFO Method**

Ending inventory:

| Date | Units | Unit Cost | Total Cost | |
|---|---|---|---|---|
| March 30 | 300 | $5.00 | $1,500 | |
| March 20 | 200 | 4.75 | 950 | $2,450 |
| Cost of goods sold: $6,450 − $2,450 = | | | | $4,000 |

**b.** **LIFO Method**

Ending inventory:

| Date | Units | Unit Cost | Total Cost | |
|---|---|---|---|---|
| March 1 | 200 | $4.00 | $ 800 | |
| March 10 | 300 | 4.50 | 1,350 | $2,150 |
| Cost of goods sold: $6,450 − $2,150 = | | | | $4,300 |

**c.** **Average-Cost Method**

| | |
|---|---|
| Average unit cost: $6,450 ÷ 1,400 = $4.607 | |
| Ending inventory: 500 × $4.607 = | $2,303.50 |
| Cost of goods sold: $6,450 − $2,303.50 = | $4,146.50 |

***2. (LO 5) Practice Problem 1** showed cost of goods sold computations under a periodic inventory system. Now let's assume that Englehart Company uses a perpetual inventory system. The company has the same inventory, purchases, and sales data for the month of March as shown earlier:

*Compute inventory and cost of goods sold using three cost flow methods in a perpetual inventory system.*

| | | | |
|---|---|---|---|
| Inventory: | March 1 | 200 units @ $4.00 | $ 800 |
| Purchases: | March 10 | 500 units @ $4.50 | 2,250 |
| | March 20 | 400 units @ $4.75 | 1,900 |
| | March 30 | 300 units @ $5.00 | 1,500 |
| Sales: | March 15 | 500 units | |
| | March 25 | 400 units | |

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The physical inventory count on March 31 shows 500 units on hand.

### Instructions

Under a **perpetual inventory system**, determine the cost of inventory on hand at March 31 and the cost of goods sold for March under (a) FIFO, (b) LIFO, and (c) moving-average cost.

### Solution

**2.** The cost of goods available for sale is $6,450, as follows.

| | | | |
|---|---|---|---|
| Inventory: | | 200 units @ $4.00 | $ 800 |
| Purchases: | March 10 | 500 units @ $4.50 | 2,250 |
| | March 20 | 400 units @ $4.75 | 1,900 |
| | March 30 | 300 units @ $5.00 | 1,500 |
| Total: | | | $6,450 |

Under a **perpetual inventory system**, the cost of goods sold under each cost flow method is as follows.

**a.** **FIFO Method**

| Date | Purchases | Cost of Goods Sold | Balance |
|---|---|---|---|
| March 1 | | | (200 @ $4.00) $ 800 |
| March 10 | (500 @ $4.50) $2,250 | | (200 @ $4.00)<br>(500 @ $4.50) } $3,050 |
| March 15 | | (200 @ $4.00)<br>(300 @ $4.50)<br>$2,150 | (200 @ $4.50) $ 900 |
| March 20 | (400 @ $4.75) $1,900 | | (200 @ $4.50)<br>(400 @ $4.75) } $2,800 |
| March 25 | | (200 @ $4.50)<br>(200 @ $4.75)<br>$1,850 | (200 @ $4.75) $ 950 |
| March 30 | (300 @ $5.00) $1,500 | | (200 @ $4.75)<br>(300 @ $5.00) } $2,450 |

Ending inventory $2,450 Cost of goods sold: $2,150 + $1,850 = $4,000

**b.** **LIFO Method**

| Date | Purchases | Cost of Goods Sold | Balance |
|---|---|---|---|
| March 1 | | | (200 @ $4.00) $ 800 |
| March 10 | (500 @ $4.50) $2,250 | | (200 @ $4.00)<br>(500 @ $4.50) } $3,050 |
| March 15 | | (500 @ $4.50) $2,250 | (200 @ $4.00) $ 800 |
| March 20 | (400 @ $4.75) $1,900 | | (200 @ $4.00)<br>(400 @ $4.75) } $2,700 |
| March 25 | | (400 @ $4.75) $1,900 | (200 @ $4.00) $ 800 |
| March 30 | (300 @ $5.00) $1,500 | | (200 @ $4.00)<br>(300 @ $5.00) } $2,300 |

Ending inventory $2,300 Cost of goods sold: $2,250 + $1,900 = $4,150

**c.** **Moving-Average Cost Method**

| Date | Purchases | Cost of Goods Sold | Balance |
|---|---|---|---|
| March 1 | | | (200 @ $ 4.00) $ 800 |
| March 10 | (500 @ $4.50) $2,250 | | (700 @ $4.357) $3,050 |
| March 15 | | (500 @ $4.357) $2,179 | (200 @ $4.357) $ 871 |
| March 20 | (400 @ $4.75) $1,900 | | (600 @ $4.618) $2,771 |
| March 25 | | (400 @ $4.618) $1,847 | (200 @ $4.618) $ 924 |
| March 30 | (300 @ $5.00) $1,500 | | (500 @ $4.848) $2,424 |

Ending inventory $2,424 Cost of goods sold: $2,179 + $1,847 = $4,026

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## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendices to the chapter.

## Questions

**1.** "The key to successful business operations is effective inventory management." Do you agree? Explain.

**2.** An item must possess two characteristics to be classified as inventory by a merchandiser. What are these two characteristics?

**3.** Your friend Ben Johnson has been hired to help take the physical inventory in Pearson Hardware Store. Explain to Ben what this job will entail.

**4.** **a.** Jovad Company ships merchandise to Martin Company on December 30. The merchandise reaches the buyer on January 6. Indicate the terms of sale that will result in the goods being included in (1) Jovad's December 31 inventory, and (2) Martin's December 31 inventory.

**b.** Under what circumstances should Jovad Company include consigned goods in its inventory?

**5.** Topp Hat Shop received a shipment of hats for which it paid the wholesaler $2,970. The price of the hats was $3,000 but Topp was given a $30 cash discount and required to pay freight charges of $50. What amount will Topp record for inventory? Why?

**6.** Explain the difference between the terms FOB shipping point and FOB destination.

**7.** Leah Clement believes that the allocation of cost of goods available for sale should be based on the actual physical flow of the goods. Explain to Leah why this may be both impractical and inappropriate.

**8.** What is the major advantage and the major disadvantage of the specific identification method of inventory costing?

**9.** "The selection of an inventory cost flow method is a decision made by accountants." Do you agree? Explain. Once a method has been selected, what accounting requirement applies?

**10.** Which assumed inventory cost flow method:

**a.** usually parallels the actual physical flow of merchandise?

**b.** divides cost of goods available by total units available for sale to determine a unit cost?

**c.** assumes that the latest units purchased are the first to be sold?

**11.** In a period of rising prices, the inventory reported in Bert Company's balance sheet is close to the current cost of the inventory, whereas Ernie Company's inventory is considerably below its current cost. Identify the inventory cost flow method being used by each company. Which company probably has been reporting the higher gross profit?

**12.** Oscar Company has been using the FIFO cost flow method during a prolonged period of inflation. During the same time period, Oscar has been paying out all of its net income as dividends. What adverse effects may result from this policy?

**13.** Kyle Adams is studying for the next accounting mid-term examination. What should Kyle know about (a) departing from the cost basis of accounting for inventories and (b) the meaning of "net realizable value" in the lower-of-cost-or-net realizable value method?

**14.** Hendrix Entertainment Center has 5 TVs on hand at the balance sheet date that cost $400 each. The net realizable value is $380 per unit. Under the lower-of-cost-or-net realizable value basis of accounting for inventories, what value should Hendrix report for the TVs on the balance sheet? Why?

**15.** Warnke Stores has 20 toasters on hand at the balance sheet date. Each costs $27. The net realizable value is $30 per unit. Under the lower-of-cost-or-net realizable value basis of accounting for inventories, what value should Warnke report for the toasters on the balance sheet? Why?

**16.** Sayaovang Company discovers in 2020 that its ending inventory at December 31, 2019, was $7,000 understated. What effect will this error have on (a) 2019 net income, (b) 2020 net income, and (c) the combined net income for the 2 years?

**17.** Dreher Company's balance sheet shows Inventory $162,800. What additional disclosures should be made?

**18.** Under what circumstances might inventory turnover be too high? That is, what possible negative consequences might occur?

**19.** What inventory cost flow does **Apple** use for its inventories? (*Hint:* You will need to examine the notes for Apple's financial statements.)

***20.** "When perpetual inventory records are kept, the results under the FIFO and LIFO methods are the same as they would be in a periodic inventory system." Do you agree? Explain.

***21.** How does the average-cost method of inventory costing differ between a perpetual inventory system and a periodic inventory system?

***22.** When is it necessary to estimate inventories?

***23.** Both the gross profit method and the retail inventory method are based on averages. For each method, indicate the average used, how it is determined, and how it is applied.

***24.** Pawlowski Company has net sales of $400,000 and cost of goods available for sale of $300,000. If the gross profit rate is 35%, what is the estimated cost of the ending inventory? Show computations.

***25.** Cinderella Shoe Shop had goods available for sale in 2020 with a retail price of $120,000. The cost of these goods was $84,000. If sales during the period were $80,000, what is the ending inventory at cost using the retail inventory method?

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## Brief Exercises

*Identify items to be included in taking a physical inventory.*

**BE6.1 (LO 1)** Peosta Company identifies the following items for possible inclusion in the taking of a physical inventory. Indicate whether each item should be included or excluded from the inventory taking.

**a.** Goods shipped on consignment by Peosta to another company.

**b.** Goods in transit from a supplier shipped FOB destination.

**c.** Goods held on consignment from another company.

*Determine ending inventory amount.*

**BE6.2 (LO 1)** Stallman Company took a physical inventory on December 31 and determined that goods costing $200,000 were on hand. Not included in the physical count were $25,000 of goods purchased from Pelzer Corporation, FOB shipping point, and $22,000 of goods sold to Alvarez Company for $30,000, FOB destination. Both the Pelzer purchase and the Alvarez sale were in transit at year-end. What amount should Stallman report as its December 31 inventory?

*Compute ending inventory using FIFO and LIFO.*

**BE6.3 (LO 2)** In its first month of operations, Weatherall Company made three purchases of merchandise in the following sequence: (1) 300 units at $6, (2) 400 units at $7, and (3) 200 units at $8. Assuming there are 380 units on hand, compute the cost of the ending inventory under the (a) FIFO method and (b) LIFO method. Weatherall uses a periodic inventory system.

*Compute the ending inventory using average-cost.*

**BE6.4 (LO 2)** Data for Weatherall Company are presented in BE6.3. Compute the cost of the ending inventory under the average-cost method, assuming there are 380 units on hand.

*Explain the financial statement effect of inventory cost flow assumptions.*

**BE6.5 (LO 2)** **Financial Statement** The management of Mastronardo Corp. is considering the effects of inventory-costing methods on its financial statements and its income tax expense. Assuming that the price the company pays for inventory is increasing, which method will:

**a.** Provide the highest net income?

**b.** Provide the highest ending inventory?

**c.** Result in the lowest income tax expense?

**d.** Result in the most stable earnings over a number of years?

*Explain the financial statement effect of inventory cost flow assumptions.*

**BE6.6 (LO 2)** **Financial Statement** In its first month of operation, Hoffman Company purchased 100 units of inventory for $6, then 200 units for $7, and finally 140 units for $8. At the end of the month, 180 units remained. Compute the amount of phantom profit that would result if the company used FIFO rather than LIFO. Explain why this amount is referred to as phantom profit. The company uses the periodic method.

*Determine correct income statement amounts.*

**BE6.7 (LO 3)** Larkin Company reports net income of $90,000 in 2020. However, ending inventory was understated $7,000. What is the correct net income for 2020? What effect, if any, will this error have on total assets as reported in the balance sheet at December 31, 2020?

*Determine the LCNRV valuation using inventory categories.*

**BE6.8 (LO 4)** Cruz Video Center accumulates the following cost and net realizable data at December 31.

| Inventory Categories | Cost Data | Net Realizable Data |
|---|---|---|
| Cameras | $12,000 | $12,300 |
| Camcorders | 9,500 | 9,700 |
| Blu-ray players | 14,000 | 12,900 |

Compute the lower-of-cost-or-net realizable value valuation for the company's total inventory.

*Compute inventory turnover and days in inventory.*

**BE6.9 (LO 4)** At December 31, 2020, the following information was available for E. Hetzel Company: ending inventory $40,000, beginning inventory $56,000, cost of goods sold $270,000, and sales revenue $380,000. Calculate inventory turnover and days in inventory for E. Hetzel Company.

*Apply cost flow methods to perpetual inventory records.*

*BE6.10 (LO 5) Rosario Department Store uses a perpetual inventory system. Data for product E2-D2 include the following purchases.

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| Date | Number of Units | Unit Price |
|---|---|---|
| May 7 | 50 | $10 |
| July 28 | 30 | 13 |

On June 1, Rosario sold 26 units, and on August 27, 40 more units. Prepare the perpetual inventory schedule for the above transactions using (a) FIFO, (b) LIFO, and (c) moving-average cost. (Round average cost per unit to nearest cent.)

*BE6.11 (LO 6) At May 31, Brunet Company has net sales of $340,000 and cost of goods available for sale of $230,000. Compute the estimated cost of the ending inventory, assuming the gross profit rate is 35%. *Apply the gross profit method.*

*BE6.12 (LO 6) On June 30, Joanna Fabrics has the following data pertaining to the retail inventory method. Goods available for sale: at cost $38,000; at retail $50,000; net sales $40,000; and ending inventory at retail $10,000. Compute the estimated cost of the ending inventory using the retail inventory method. *Apply the retail inventory method.*

## DO IT! Exercises

**DO IT! 6.1 (LO 1)** Gresa Company just took its physical inventory. The count of inventory items on hand at the company's business locations resulted in a total inventory cost of $300,000. In reviewing the details of the count and related inventory transactions, you have discovered the following. *Apply rules of ownership to determine inventory cost.*

1. Gresa has sent inventory costing $26,000 on consignment to Alissa Company. All of this inventory was at Alissa's showrooms on December 31.
2. The company did not include in the count inventory (cost, $20,000) that was sold on December 28, terms FOB shipping point. The goods were in transit on December 31.
3. The company did not include in the count inventory (cost, $14,000) that was purchased with terms of FOB shipping point. The goods were in transit on December 31.

Compute the correct December 31 inventory.

**DO IT! 6.2 (LO 2)** The accounting records of Americo Electronics show the following data. *Compute cost of goods sold under different cost flow methods.*

| | |
|---|---|
| Beginning inventory | 3,000 units at $5 |
| Purchases | 8,000 units at $7 |
| Sales | 9,400 units at $10 |

Determine cost of goods sold during the period under a periodic inventory system using (a) the FIFO method, (b) the LIFO method, and (c) the average-cost method. (Round unit cost to nearest tenth of a cent.)

**DO IT! 6.3 (LO 3)** Vanida Company understated its 2019 ending inventory by $27,000. Determine the impact this error has on ending inventory, cost of goods sold, and owner's equity in 2019 and 2020. *Determine effect of inventory error.*

**DO IT! 6.4a (LO 4)** Cody Company sells three different categories of tools (small, medium, and large). The cost and net realizable value of its inventory of tools are as follows. *Compute inventory value under LCNRV.*

| | Cost | Net Realizable Value |
|---|---|---|
| Small | $ 64,000 | $ 73,000 |
| Medium | 290,000 | 260,000 |
| Large | 152,000 | 171,000 |

Determine the value of the company's inventory under the lower-of-cost-or-net realizable value approach.

**DO IT! 6.4b (LO 4)** Early in 2020, Yeng Company switched to a just-in-time inventory system. Its sales revenue, cost of goods sold, and inventory amounts for 2019 and 2020 are shown below. *Compute inventory turnover and assess inventory level.*

| | 2019 | 2020 |
|---|---|---|
| Sales | $3,120,000 | $3,713,000 |
| Cost of goods sold | 1,200,000 | 1,425,000 |
| Beginning inventory | 180,000 | 220,000 |
| Ending inventory | 220,000 | 100,000 |

Determine the inventory turnover and days in inventory for 2019 and 2020. Discuss the changes in the amount of inventory, the inventory turnover and days in inventory, and the amount of sales across the two years.

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## Exercises

*Determine the correct inventory amount.*

**E6.1 (LO 1)** Tri-State Bank and Trust is considering giving Wilfred Company a loan. Before doing so, management decides that further discussions with Wilfred's accountant may be desirable. One area of particular concern is the inventory account, which has a year-end balance of $297,000. Discussions with the accountant reveal the following.

1. Wilfred shipped goods costing $38,000 to Lilja Company, FOB shipping point, on December 28. The goods are not expected to arrive at Lilja until January 12. The goods were not included in the physical inventory because they were not in the warehouse.
2. The physical count of the inventory did not include goods costing $95,000 that were shipped to Wilfred FOB destination on December 27 and were still in transit at year-end.
3. Wilfred received goods costing $22,000 on January 2. The goods were shipped FOB shipping point on December 26 by Brent Co. The goods were not included in the physical count.
4. Wilfred shipped goods costing $35,000 to Jesse Co., FOB destination, on December 30. The goods were received at Jesse on January 8. They were not included in Wilfred's physical inventory.
5. Wilfred received goods costing $44,000 on January 2 that were shipped FOB destination on December 29. The shipment was a rush order that was supposed to arrive December 31. This purchase was included in the ending inventory of $297,000.

### Instructions

Determine the correct inventory amount on December 31.

*Determine the correct inventory amount.*

**E6.2 (LO 1)** Kari Downs, an auditor with Wheeler CPAs, is performing a review of Depue Company's inventory account. Depue did not have a good year, and top management is under pressure to boost reported income. According to its records, the inventory balance at year-end was $740,000. However, the following information was not considered when determining that amount.

1. Included in the company's count were goods with a cost of $250,000 that the company is holding on consignment. The goods belong to Kroeger Corporation.
2. The physical count did not include goods purchased by Depue with a cost of $40,000 that were shipped FOB destination on December 28 and did not arrive at Depue warehouse until January 3.
3. Included in the inventory account was $14,000 of office supplies that were stored in the warehouse and were to be used by the company's supervisors and managers during the coming year.
4. The company received an order on December 29 that was boxed and sitting on the loading dock awaiting pick-up on December 31. The shipper picked up the goods on January 1 and delivered them on January 6. The shipping terms were FOB shipping point. The goods had a selling price of $40,000 and a cost of $28,000. The goods were not included in the count because they were sitting on the dock.
5. On December 29, Depue shipped goods with a selling price of $80,000 and a cost of $60,000 to Macchia Sales Corporation FOB shipping point. The goods arrived on January 3. Macchia had only ordered goods with a selling price of $10,000 and a cost of $8,000. However, a sales manager at Depue had authorized the shipment and said that if Machia wanted to ship the goods back next week, it could.
6. Included in the count was $40,000 of goods that were parts for a machine that the company no longer made. Given the high-tech nature of Depue's products, it was unlikely that these obsolete parts had any other use. However, management would prefer to keep them on the books at cost, "since that is what we paid for them, after all."

### Instructions

Prepare a schedule to determine the correct inventory amount. Provide explanations for each item above, saying why you did or did not make an adjustment for each item.

*Identify items in inventory.*

**E6.3 (LO 1)** Gato Inc. had the following inventory situations to consider at January 31, its year-end.

**a.** Goods held on consignment for Steele Corp. since December 12.

**b.** Goods shipped on consignment to Logan Holdings Inc. on January 5.

**c.** Goods shipped to a customer, FOB destination, on January 29 that are still in transit.

**d.** Goods shipped to a customer, FOB shipping point, on January 29 that are still in transit.

**e.** Goods purchased FOB destination from a supplier on January 25 that are still in transit.

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**f.** Goods purchased FOB shipping point from a supplier on January 25 that are still in transit.

**g.** Office supplies on hand at January 31.

### Instructions

Identify which of the preceding items should be included in inventory. If the item should not be included in inventory, state in what account, if any, it should have been recorded.

*Calculate cost of goods sold using specific identification and FIFO.*

**E6.4 (LO 2)** On December 1, Kiyak Electronics Ltd. has three DVD players left in stock. All are identical, all are priced to sell at $150. One of the three DVD players left in stock, with serial #1012, was purchased on June 1 at a cost of $100. Another, with serial #1045, was purchased on November 1 for $88. The last player, serial #1056, was purchased on November 30 for $80.

### Instructions

**a.** Calculate the cost of goods sold using the FIFO periodic inventory method assuming that two of the three players were sold by the end of December, Kiyak Electronics' year-end.

**b.** If Kiyak Electronics used the specific identification method instead of the FIFO method, how might it alter its earnings by "selectively choosing" which particular players to sell to the two customers? What would Kiyak's cost of goods sold be if the company wished to minimize earnings? Maximize earnings?

**c.** Which of the two inventory methods do you recommend that Kiyak use? Explain why.

*Compute inventory and cost of goods sold using FIFO and LIFO.*

**E6.5 (LO 2)** Elsa's Boards sells a snowboard, Xpert, that is popular with snowboard enthusiasts. Information relating to Elsa's purchases of Xpert snowboards during September is shown below. During the same month, 121 Xpert snowboards were sold. Elsa's uses a periodic inventory system.

| Date | Explanation | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| Sept. 1 | Inventory | 26 | $ 97 | $ 2,522 |
| Sept. 12 | Purchases | 45 | 102 | 4,590 |
| Sept. 19 | Purchases | 20 | 104 | 2,080 |
| Sept. 26 | Purchases | 50 | 105 | 5,250 |
| | Totals | 141 | | $14,442 |

### Instructions

**a.** Compute the ending inventory at September 30 and cost of goods sold using the FIFO and LIFO methods. Prove the amount allocated to cost of goods sold under each method.

**b.** For both FIFO and LIFO, calculate the sum of ending inventory and cost of goods sold. What do you notice about the answers you found for each method?

*Compute inventory and cost of goods sold using FIFO and LIFO.*

**E6.6 (LO 2)** Ballas Co. uses a periodic inventory system. Its records show the following for the month of May, in which 68 units were sold.

| | | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| May 1 | Inventory | 30 | $ 8 | $240 |
| 15 | Purchases | 25 | 11 | 275 |
| 24 | Purchases | 35 | 12 | 420 |
| | Totals | 90 | | $935 |

### Instructions

Compute the ending inventory at May 31 and cost of goods sold using the FIFO and LIFO methods. Prove the amount allocated to cost of goods sold under each method.

*Compute inventory and cost of goods sold using FIFO and LIFO.*

**E6.7 (LO 2)** Moath Company reports the following for the month of June.

| | | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| June 1 | Inventory | 200 | $5 | $1,000 |
| 12 | Purchase | 400 | 6 | 2,400 |
| 23 | Purchase | 300 | 7 | 2,100 |
| 30 | Inventory | 100 | | |

### Instructions

**a.** Compute the cost of the ending inventory and the cost of goods sold under (1) FIFO and (2) LIFO.

**b.** Which costing method gives the higher ending inventory? Why?

**c.** Which method results in the higher cost of goods sold? Why?

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*Compute inventory under FIFO, LIFO, and average-cost.*

**E6.8 (LO 2)** Shawn Company had 100 units in beginning inventory at a total cost of $10,000. The company purchased 200 units at a total cost of $26,000. At the end of the year, Shawn had 75 units in ending inventory.

### Instructions

**a.** Compute the cost of the ending inventory and the cost of goods sold under (1) FIFO, (2) LIFO, and (3) average-cost.

**b.** Which cost flow method would result in the highest net income?

**c.** Which cost flow method would result in inventories approximating current cost in the balance sheet?

**d.** Which cost flow method would result in Shawn paying the least taxes in the first year?

*Compute inventory and cost of goods sold using average-cost.*

**E6.9 (LO 2)** Inventory data for Moath Company are presented in E6.7.

### Instructions

**a.** Compute the cost of the ending inventory and the cost of goods sold using the average-cost method.

**b.** Will the results in (a) be higher or lower than the results under (1) FIFO and (2) LIFO?

**c.** Why is the average unit cost not $6?

*Determine effects of inventory errors.*

**E6.10 (LO 3)** Elliott's Hardware reported cost of goods sold as follows.

| | 2019 | 2020 |
|---|---|---|
| Beginning inventory | $ 20,000 | $ 30,000 |
| Cost of goods purchased | 150,000 | 175,000 |
| Cost of goods available for sale | 170,000 | 205,000 |
| Ending inventory | 30,000 | 35,000 |
| Cost of goods sold | $140,000 | $170,000 |

Elliott's made two errors: (1) 2019 ending inventory was overstated $3,000, and (2) 2020 ending inventory was understated $5,000.

### Instructions

Compute the correct cost of goods sold for each year.

*Prepare correct income statements.*

**E6.11 (LO 3)** Financial Statement Writing Smart Watch Company reported the following income statement data for a 2-year period.

| | 2019 | 2020 |
|---|---|---|
| Sales revenue | $220,000 | $250,000 |
| Cost of goods sold | | |
| Beginning inventory | 32,000 | 44,000 |
| Cost of goods purchased | 173,000 | 202,000 |
| Cost of goods available for sale | 205,000 | 246,000 |
| Ending inventory | 44,000 | 52,000 |
| Cost of goods sold | 161,000 | 194,000 |
| Gross profit | $ 59,000 | $ 56,000 |

Smart uses a periodic inventory system. The inventories at January 1, 2019, and December 31, 2020, are correct. However, the ending inventory at December 31, 2019, was overstated $6,000.

### Instructions

**a.** Prepare correct income statement data for the 2 years.

**b.** What is the cumulative effect of the inventory error on total gross profit for the 2 years?

**c.** Explain in a letter to the president of Smart Watch Company what has happened, i.e., the nature of the error and its effect on the financial statements.

*Determine ending inventory under LCNRV.*

**E6.12 (LO 4)** Freeze Frame Camera Shop uses the lower-of-cost-or-net realizable value basis for its inventory. The following data are available at December 31.

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| Item | Units | Unit Cost | Net Realizable Value |
|---|---|---|---|
| Cameras: | | | |
| Minolta | 5 | $170 | $156 |
| Canon | 6 | 150 | 152 |
| Light meters: | | | |
| Vivitar | 10 | 125 | 115 |
| Kodak | 14 | 120 | 135 |

**Instructions**

Determine the amount of the ending inventory by applying the lower-of-cost-or-net realizable value basis.

**E6.13 (LO 4)** Charapata Company applied FIFO to its inventory and got the following results for its ending inventory. *Compute lower-of-cost-or-net realizable value.*

| | |
|---|---|
| Cameras | 100 units at a cost per unit of $65 |
| Blu-ray players | 150 units at a cost per unit of $75 |
| iPods | 125 units at a cost per unit of $80 |

The net realizable value at year-end was cameras $71, Blu-ray players $67, and iPods $78.

**Instructions**

Determine the amount of ending inventory at lower-of-cost-or-net realizable value.

**E6.14 (LO 4)** This information is available for Abdullah's Photo Corporation for 2018, 2019, and 2020. *Compute inventory turnover, days in inventory, and gross profit rate.*

| | 2018 | 2019 | 2020 |
|---|---|---|---|
| Beginning inventory | $ 100,000 | $ 300,000 | $ 400,000 |
| Ending inventory | 300,000 | 400,000 | 480,000 |
| Cost of goods sold | 900,000 | 1,152,000 | 1,300,000 |
| Sales revenue | 1,200,000 | 1,600,000 | 1,900,000 |

**Instructions**

Calculate inventory turnover (round to two decimal places), days in inventory (round to one decimal place), and gross profit rate (from Chapter 5, round to nearest percentage) for Abdullah's Photo Corporation for 2018, 2019, and 2020. Comment on any trends.

**E6.15 (LO 4)** The cost of goods sold computations for Sooner Company and Later Company are shown below. *Compute inventory turnover and days in inventory.*

| | Sooner Company | Later Company |
|---|---|---|
| Beginning inventory | $ 45,000 | $ 71,000 |
| Cost of goods purchased | 200,000 | 290,000 |
| Cost of goods available for sale | 245,000 | 361,000 |
| Ending inventory | 55,000 | 69,000 |
| Cost of goods sold | $190,000 | $292,000 |

**Instructions**

**a.** Compute inventory turnover (round to two decimal places) and days in inventory (round to nearest day) for each company.

**b.** Which company moves its inventory more quickly?

*E6.16 (LO 5) Ehrhart Appliance uses a perpetual inventory system. For its flat-screen television sets, the January 1 inventory was 3 sets at $600 each. On January 10, Ehrhart purchased 6 units at $660 each. The company sold 2 units on January 8 and 5 units on January 15. *Apply cost flow methods to perpetual records.*

**Instructions**

Compute the ending inventory under (a) FIFO, (b) LIFO, and (c) moving-average cost.

*E6.17 (LO 5) Moath Company reports the following for the month of June. *Calculate inventory and cost of goods sold using three cost flow methods in a perpetual inventory system.*

| Date | Explanation | Units | Unit Cost | Total Cost |
|---|---|---|---|---|
| June 1 | Inventory | 200 | $5 | $1,000 |
| 12 | Purchase | 400 | 6 | 2,400 |
| 23 | Purchase | 300 | 7 | 2,100 |
| 30 | Inventory | 100 | | |

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**Instructions**

**a.** Calculate the cost of the ending inventory and the cost of goods sold for each cost flow assumption, using a perpetual inventory system. Assume a sale of 440 units occurred on June 15 for a selling price of $8 and a sale of 360 units on June 27 for $9.

**b.** How do the results differ from the answers to E6.7 and E6.9?

**c.** Why is the average unit cost not $6 [($5 + $6 + $7) ÷ 3 = $6]?

*Apply cost flow methods to perpetual records.*

***E6.18 (LO 5)** Information about Elsa's Boards is presented in E6.5. Additional data regarding Elsa's sales of Xpert snowboards are provided below. Assume that Elsa's uses a perpetual inventory system.

| Date | | Units | Unit Price | Total Revenue |
|---|---|---|---|---|
| Sept. 5 | Sale | 12 | $199 | $ 2,388 |
| Sept. 16 | Sale | 50 | 199 | 9,950 |
| Sept. 29 | Sale | 59 | 209 | 12,331 |
| | Totals | 121 | | $24,669 |

**Instructions**

**a.** Compute ending inventory at September 30 using FIFO, LIFO, and moving-average cost.

**b.** Compare ending inventory using a perpetual inventory system to ending inventory using a periodic inventory system (from E6.5).

**c.** Which inventory cost flow method (FIFO, LIFO) gives the same ending inventory value under both periodic and perpetual? Which method gives different ending inventory values?

*Use the gross profit method to estimate inventory.*

***E6.19 (LO 6)** Shereen Company reported the following information for November and December 2020.

| | November | December |
|---|---|---|
| Cost of goods purchased | $536,000 | $ 610,000 |
| Inventory, beginning-of-month | 130,000 | 120,000 |
| Inventory, end-of-month | 120,000 | ? |
| Sales revenue | 840,000 | 1,000,000 |

Shereen's ending inventory at December 31 was destroyed in a fire.

**Instructions**

**a.** Compute the gross profit rate for November.

**b.** Using the gross profit rate for November, determine the estimated cost of inventory lost in the fire.

*Determine merchandise lost using the gross profit method of estimating inventory.*

***E6.20 (LO 6)** The inventory of Hang Company was destroyed by fire on March 1. From an examination of the accounting records, the following data for the first 2 months of the year are obtained: Sales Revenue $51,000, Sales Returns and Allowances $1,000, Purchases $31,200, Freight-In $1,200, and Purchase Returns and Allowances $1,400.

**Instructions**

Determine the merchandise lost by fire, assuming:

**a.** A beginning inventory of $20,000 and a gross profit rate of 30% on net sales.

**b.** A beginning inventory of $30,000 and a gross profit rate of 40% on net sales.

*Determine ending inventory at cost using retail method.*

***E6.21 (LO 6)** Kicks Shoe Store uses the retail inventory method for its two departments, Women's Shoes and Men's Shoes. The following information for each department is obtained.

| Item | Women's Shoes | Men's Shoes |
|---|---|---|
| Beginning inventory at cost | $ 25,000 | $ 45,000 |
| Cost of goods purchased at cost | 110,000 | 136,300 |
| Net sales | 178,000 | 185,000 |
| Beginning inventory at retail | 46,000 | 60,000 |
| Cost of goods purchased at retail | 179,000 | 185,000 |

**Instructions**

Compute the estimated cost of the ending inventory for each department under the retail inventory method.

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## Problems: Set A

**P6.1A (LO 1)** Houghton Limited is trying to determine the value of its ending inventory as of February 28, 2020, the company's year-end. The following transactions occurred, and the accountant asked your help in determining whether they should be recorded or not.

*Determine items and amounts to be recorded in inventory.*

**a.** On February 26, Houghton shipped goods costing $800 to a customer and charged the customer $1,000. The goods were shipped with terms FOB shipping point and the receiving report indicates that the customer received the goods on March 2.

**b.** On February 26, Crain Inc. shipped goods to Houghton under terms FOB shipping point. The invoice price was $450 plus $30 for freight. The receiving report indicates that the goods were received by Houghton on March 2.

**c.** Houghton had $720 of inventory isolated in the warehouse. The inventory is designated for a customer who has requested that the goods be shipped on March 10.

**d.** Also included in Houghton's warehouse is $700 of inventory that Korenic Producers shipped to Houghton on consignment.

**e.** On February 26, Houghton issued a purchase order to acquire goods costing $900. The goods were shipped with terms FOB destination on February 27. Houghton received the goods on March 2.

**f.** On February 26, Houghton shipped goods to a customer under terms FOB destination. The invoice price was $390; the cost of the items was $240. The receiving report indicates that the goods were received by the customer on March 2.

**g.** Houghton had damaged goods set aside in the warehouse because they are no longer saleable. These goods originally cost $400, and Houghton had expected to sell these items for $600.

### Instructions

For each of the preceding transactions, specify whether the item in question should be included in ending inventory, and if so, at what amount. For each item that is not included in ending inventory, indicate who owns it and in what account, if any, it should have been recorded.

**P6.2A (LO 2)** Glee Distribution markets CDs of the performing artist Unique. At the beginning of October, Glee had in beginning inventory 2,000 of Unique's CDs with a unit cost of $7. During October, Glee made the following purchases of Unique's CDs.

*Determine cost of goods sold and ending inventory using FIFO, LIFO, and average-cost with analysis.*

Excel

| | | | |
|---|---|---|---|
| Oct. 3 | 2,500 @ $8 | Oct. 19 | 3,000 @ $10 |
| Oct. 9 | 3,500 @ $9 | Oct. 25 | 4,000 @ $11 |

During October, 10,900 units were sold. Glee uses a periodic inventory system.

### Instructions

**a.** Determine the cost of goods available for sale.

**b.** Determine (1) the ending inventory and (2) the cost of goods sold under each of the assumed cost flow methods (FIFO, LIFO, and average-cost). Prove the accuracy of the cost of goods sold under the FIFO and LIFO methods.

b. (2) Cost of goods sold:

| | |
|---|---|
| FIFO | $ 94,500 |
| LIFO | $108,700 |
| Average | $101,370 |

**c.** Which cost flow method results in (1) the highest inventory amount for the balance sheet and (2) the highest cost of goods sold for the income statement?

**P6.3A (LO 2)** **Financial Statement** Sekhon Company had a beginning inventory on January 1 of 160 units of Product 4-18-15 at a cost of $20 per unit. During the year, the following purchases were made.

*Determine cost of goods sold and ending inventory, using FIFO, LIFO, and average-cost with analysis.*

| | | | |
|---|---|---|---|
| Mar. 15 | 400 units at $23 | Sept. 4 | 330 units at $26 |
| July 20 | 250 units at $24 | Dec. 2 | 100 units at $29 |

1,000 units were sold. Sekhon Company uses a periodic inventory system.

### Instructions

**a.** Determine the cost of goods available for sale.

**b.** Determine (1) the ending inventory, and (2) the cost of goods sold under each of the assumed cost flow methods (FIFO, LIFO, and average-cost). Prove the accuracy of the cost of goods sold under the FIFO and LIFO methods.

b. (2) Cost of goods sold:

| | |
|---|---|
| FIFO | $23,340 |
| LIFO | $24,840 |
| Average | $24,097 |

**c.** Which cost flow method results in (1) the highest inventory amount for the balance sheet, and (2) the highest cost of goods sold for the income statement?

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*Compute ending inventory, prepare income statements, and answer questions using FIFO and LIFO.*

**P6.4A (LO 2)** **Financial Statement** **Writing** The management of Gresa Inc. is reevaluating the appropriateness of using its present inventory cost flow method, which is average-cost. The company requests your help in determining the results of operations for 2020 if either the FIFO or the LIFO method had been used. For 2020, the accounting records show these data:

| Inventories | | Purchases and Sales | |
|---|---|---|---|
| Beginning (7,000 units) | $14,000 | Total net sales (180,000 units) | $747,000 |
| Ending (17,000 units) | | Total cost of goods purchased (190,000 units) | 466,000 |

Purchases were made quarterly as follows.

| Quarter | Units | Unit Cost | Total Cost |
|---|---|---|---|
| 1 | 50,000 | $2.20 | $110,000 |
| 2 | 40,000 | 2.35 | 94,000 |
| 3 | 40,000 | 2.50 | 100,000 |
| 4 | 60,000 | 2.70 | 162,000 |
| | 190,000 | | $466,000 |

Operating expenses were $130,000, and the company's income tax rate is 40%.

**Instructions**

a. Gross profit:
FIFO $312,900
LIFO $303,000

**a.** Prepare comparative condensed income statements for 2020 under FIFO and LIFO. (Show computations of ending inventory.)

**b.** Answer the following questions for management.

**1.** Which cost flow method (FIFO or LIFO) produces the more meaningful inventory amount for the balance sheet? Why?

**2.** Which cost flow method (FIFO or LIFO) produces the more meaningful net income? Why?

**3.** Which cost flow method (FIFO or LIFO) is more likely to approximate the actual physical flow of goods? Why?

**4.** How much more cash will be available for management under LIFO than under FIFO? Why?

**5.** Will gross profit under the average-cost method be higher or lower than FIFO? Than LIFO? (*Note:* It is not necessary to quantify your answer.)

*Calculate ending inventory, cost of goods sold, gross profit, and gross profit rate under periodic method; compare results.*

**P6.5A (LO 2)** You are provided with the following information for Koetteritz Inc. for the month ended June 30, 2020. Koetteritz uses the periodic method for inventory.

| Date | Description | Quantity | Unit Cost or Selling Price |
|---|---|---|---|
| June 1 | Beginning inventory | 40 | $40 |
| June 4 | Purchase | 135 | 43 |
| June 10 | Sale | 110 | 70 |
| June 11 | Sale return | 15 | 70 |
| June 18 | Purchase | 55 | 46 |
| June 18 | Purchase return | 10 | 46 |
| June 25 | Sale | 65 | 76 |
| June 28 | Purchase | 35 | 50 |

**Instructions**

a. (iii) Gross profit:
LIFO $4,330
FIFO $4,830
Average $4,546.90

**a.** Calculate (i) ending inventory, (ii) cost of goods sold, (iii) gross profit, and (iv) gross profit rate under each of the following methods.

(1) LIFO. (2) FIFO. (3) Average-cost.

**b.** Compare results for the three cost flow assumptions.

*Compare specific identification, FIFO, and LIFO under periodic method; use cost flow assumption to justify price increase.*

**P6.6A (LO 2)** **Financial Statement** You are provided with the following information for Gobler Inc. Gobler Inc. uses the periodic method of accounting for its inventory transactions.

March 1 Beginning inventory 2,000 liters at a cost of 60¢ per liter.
March 3 Purchased 2,500 liters at a cost of 65¢ per liter.
March 5 Sold 2,300 liters for $1.05 per liter.
March 10 Purchased 4,000 liters at a cost of 72¢ per liter.
March 20 Purchased 2,500 liters at a cost of 80¢ per liter.
March 30 Sold 5,200 liters for $1.25 per liter.

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### Instructions

**a.** Prepare partial income statements for 2020 through gross profit, and calculate the value of ending inventory that would be reported on the balance sheet, under each of the following cost flow assumptions. (Round ending inventory and cost of goods sold to the nearest dollar.)

**1.** Specific identification method assuming:
(i) The March 5 sale consisted of 1,000 liters from the March 1 beginning inventory and 1,300 liters from the March 3 purchase; and
(ii) The March 30 sale consisted of the following number of units sold from beginning inventory and each purchase: 450 liters from March 1; 550 liters from March 3; 2,900 liters from March 10; 1,300 liters from March 20.

**2.** FIFO.

**3.** LIFO.

**b.** How can companies use a cost flow method to justify price increases? Which cost flow method would best support an argument to increase prices?

a. Gross profit:
1. Specific identification $3,715
2. FIFO $3,930
3. LIFO $3,385

**P6.7A (LO 2)** Financial Statement Writing The management of Danica Co. asks your help in determining the comparative effects of the FIFO and LIFO inventory cost flow methods. For 2020, the accounting records provide the following data.

*Compute ending inventory, prepare income statements, and answer questions using FIFO and LIFO.*

| | |
|---|---|
| Inventory, January 1 (10,000 units) | $ 47,000 |
| Cost of 100,000 units purchased | 532,000 |
| Selling price of 84,000 units sold | 735,000 |
| Operating expenses | 140,000 |

Units purchased consisted of 35,000 units at $5.10 on May 10; 35,000 units at $5.30 on August 15; and 30,000 units at $5.60 on November 20. Income taxes are 30%.

### Instructions

**a.** Prepare comparative condensed income statements for 2020 under FIFO and LIFO. (Show computations of ending inventory.)

**b.** Answer the following questions for management.

**1.** Which inventory cost flow method produces the most meaningful inventory amount for the balance sheet? Why?

**2.** Which inventory cost flow method produces the most meaningful net income? Why?

**3.** Which inventory cost flow method is most likely to approximate actual physical flow of the goods? Why?

**4.** How much additional cash will be available for management under LIFO than under FIFO? Why?

**5.** How much of the gross profit under FIFO is illusory in comparison with the gross profit under LIFO?

a. Net income
FIFO $113,120
LIFO $101,220

***P6.8A (LO 5)** Dempsey Inc. is a retailer operating in British Columbia. Dempsey uses the perpetual inventory method. All sales returns from customers result in the goods being returned to inventory; the inventory is not damaged. Assume that there are no credit transactions; all amounts are settled in cash. You are provided with the following information for Dempsey Inc. for the month of January 2020.

*Calculate cost of goods sold and ending inventory under LIFO, FIFO, and moving-average cost under the perpetual system; compare gross profit under each assumption.*

| Date | Description | Quantity | Unit Cost or Selling Price |
|---|---|---|---|
| January 1 | Beginning inventory | 100 | $15 |
| January 5 | Purchase | 140 | 18 |
| January 8 | Sale | 110 | 28 |
| January 10 | Sale return | 10 | 28 |
| January 15 | Purchase | 55 | 20 |
| January 16 | Purchase return | 5 | 20 |
| January 20 | Sale | 90 | 32 |
| January 25 | Purchase | 20 | 22 |

### Instructions

**a.** For each of the following cost flow assumptions, calculate (i) cost of goods sold, (ii) ending inventory, and (iii) gross profit.

**1.** LIFO.

**2.** FIFO.

**3.** Moving-average cost. (Round cost per unit to three decimal places.)

**b.** Compare results for the three cost flow assumptions.

a. (iii) Gross profit:
LIFO $2,160
FIFO $2,560
Average $2,421

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*Determine ending inventory under a perpetual inventory system.*

***P6.9A (LO 5)** Wittmann Co. began operations on July 1. It uses a perpetual inventory system. During July, the company had the following purchases and sales.

| | Purchases | | |
|---|---|---|---|
| Date | Units | Unit Cost | Sales Units |
| July 1 | 5 | $122 | |
| July 6 | | | 3 |
| July 11 | 7 | $136 | |
| July 14 | | | 5 |
| July 21 | 8 | $147 | |
| July 27 | | | 5 |

**Instructions**

a. Ending inventory
FIFO $1,029
Avg. $996
LIFO $957

**a.** Determine the ending inventory under a perpetual inventory system using (1) FIFO, (2) moving-average cost, and (3) LIFO.

**b.** Which costing method produces the highest ending inventory valuation?

*Compute gross profit rate and inventory loss using gross profit method.*

Excel

***P6.10A (LO 6)** Bao Company lost all of its inventory in a fire on December 26, 2020. The accounting records showed the following gross profit data for November and December.

| | November | December (to 12/26) |
|---|---|---|
| Net sales | $600,000 | $700,000 |
| Beginning inventory | 32,000 | 36,000 |
| Purchases | 389,000 | 420,000 |
| Purchase returns and allowances | 13,300 | 14,900 |
| Purchase discounts | 8,500 | 9,500 |
| Freight-in | 8,800 | 9,900 |
| Ending inventory | 36,000 | ? |

Bao is fully insured for fire losses but must prepare a report for the insurance company.

**Instructions**

a. Gross profit rate 38%

**a.** Compute the gross profit rate for November.

**b.** Using the gross profit rate for November, determine the estimated cost of the inventory lost in the fire.

*Compute ending inventory using retail method.*

***P6.11A (LO 6)** Rayre Books uses the retail inventory method to estimate its monthly ending inventories. The following information is available for two of its departments at October 31, 2020.

| | Hardcovers | | Paperbacks | |
|---|---|---|---|---|
| | Cost | Retail | Cost | Retail |
| Beginning inventory | $ 420,000 | $ 640,000 | $ 280,000 | $ 360,000 |
| Purchases | 2,135,000 | 3,200,000 | 1,155,000 | 1,540,000 |
| Freight-in | 24,000 | | 12,000 | |
| Purchase discounts | 44,000 | | 22,000 | |
| Net sales | | 3,100,000 | | 1,570,000 |

At December 31, Rayre Books takes a physical inventory at retail. The actual retail values of the inventories in each department are Hardcovers $744,000 and Paperbacks $335,000.

**Instructions**

a. Hardcovers: End. Inv. $488,400

**a.** Determine the estimated cost of the ending inventory for each department at **October 31**, 2020, using the retail inventory method.

**b.** Compute the ending inventory at cost for each department at **December 31**, assuming the cost-to-retail ratios for the year are 65% for Hardcovers and 75% for Paperbacks.

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## Continuing Case

### Cookie Creations

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(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 5.)

**CC6** Natalie is busy establishing both divisions of her business (cookie classes and mixer sales) and completing her business degree. Her goals for the next 11 months are to sell one mixer per month and to give two to three classes per week.

The cost of the fine European mixers is expected to increase. Natalie has just negotiated new terms with Kzinski that include shipping costs in the negotiated purchase price (mixers will be shipped FOB destination). Natalie must choose a cost flow assumption for her mixer inventory.

*Go to* **WileyPLUS** *for complete case details and instructions.*

## Ethics Case

**EC6** R. J. Graziano Wholesale Corp. uses the LIFO method of inventory costing. In the current year, profit at R. J. Graziano is running unusually high. The corporate tax rate is also high this year, but it is scheduled to decline significantly next year. In an effort to lower the current year's net income and to take advantage of the changing income tax rate, the president of R. J. Graziano Wholesale instructs the plant accountant to recommend to the purchasing department a large purchase of inventory for delivery 3 days before the end of the year. The price of the inventory to be purchased has doubled during the year, and the purchase will represent a major portion of the ending inventory value.

### Instructions

**a.** What is the effect of this transaction on this year's and next year's income statement and income tax expense? Why?

**b.** If R. J. Graziano Wholesale had been using the FIFO method of inventory costing, would the president give the same directive?

**c.** Should the plant accountant order the inventory purchase to lower income? What are the ethical implications of this order?

## Comprehensive Accounting Cycle Review

**ACR6** **Financial Statement** On December 1, 2020, Annalise Company had the account balances shown below.

| | Debit | | Credit |
|---|---|---|---|
| Cash | $ 4,800 | Accumulated Depreciation—Equipment | $ 1,500 |
| Accounts Receivable | 3,900 | Accounts Payable | 3,000 |
| Inventory | 1,800* | Owner's Capital | 27,000 |
| Equipment | 21,000 | | $31,500 |
| | $31,500 | | |

*(3,000 × $0.60)

The following transactions occurred during December.

Dec. 3 Purchased 4,000 units of inventory on account at a cost of $0.74 per unit.
5 Sold 4,400 units of inventory on account for $0.90 per unit. (Annalise sold 3,000 of the $0.60 units and 1,400 of the $0.74.)
7 Granted the December 5 customer $180 credit for 200 units of inventory returned costing $120. These units were returned to inventory.
17 Purchased 2,200 units of inventory for cash at $0.80 each.
22 Sold 2,100 units of inventory on account for $0.95 per unit. (Annalise sold 2,100 of the $0.74 units.)

**Adjustment data:**

**1.** Accrued salaries payable $400.

**2.** Depreciation $200 per month.

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**Instructions**

**a.** Journalize the December transactions and adjusting entries, assuming Annalise uses the perpetual inventory method.

**b.** Enter the December 1 balances in the ledger T-accounts and post the December transactions. In addition to the accounts mentioned above, use the following additional accounts: Cost of Goods Sold, Depreciation Expense, Salaries and Wages Expense, Salaries and Wages Payable, Sales Revenue, and Sales Returns and Allowances.

**c.** Prepare an adjusted trial balance as of December 31, 2020.

**d.** Prepare an income statement for December 2020 and a classified balance sheet at December 31, 2020.

**e.** Compute ending inventory and cost of goods sold under FIFO, assuming Annalise Company uses the periodic inventory system.

**f.** Compute ending inventory and cost of goods sold under LIFO, assuming Annalise Company uses the periodic inventory system.

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT6.1** The notes that accompany a company's financial statements provide informative details that would clutter the amounts and descriptions presented in the statements. Refer to the financial statements of **Apple Inc.** in Appendix A as well as its annual report. The complete annual report, including the notes to the financial statements, is available at the company's website.

**Instructions**

Answer the following questions. Complete the requirements in millions of dollars, as shown in Apple's annual report.

**a.** What did Apple report for the amount of inventories in its consolidated balance sheet at September 27, 2014? At September 26, 2015?

**b.** Compute the dollar amount of change and the percentage change in inventories between 2014 and 2015. Compute inventory as a percentage of current assets at September 26, 2015.

**c.** How does Apple value its inventories? Which inventory cost flow method does Apple use? (See Notes to the Financial Statements.)

**d.** What is the cost of sales (cost of goods sold) reported by Apple for 2015, 2014, and 2013? Compute the percentage of cost of sales to net sales in 2015.

### Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT6.2** **PepsiCo**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

**Instructions**

**a.** Based on the information contained in these financial statements, compute the following 2015 ratios for each company.

**1.** Inventory turnover.

**2.** Days in inventory.

**b.** What conclusions concerning the management of the inventory can you draw from these data?

### Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT6.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

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### Instructions

**a.** Based on the information contained in these financial statements, compute the following 2015 ratios for each company.

**1.** Inventory turnover.

**2.** Days in inventory.

**b.** What conclusions concerning the management of the inventory can you draw from these data?

## Real-World Focus

**CT6.4** A company's annual report usually will identify the inventory method used. Knowing that, you can analyze the effects of the inventory method on the income statement and balance sheet.

### Instructions

Answer the following questions based on **Cisco**'s current year's annual report (available on the company's website).

**a.** At Cisco's fiscal year-end, what was the inventory on the balance sheet?

**b.** How has this changed from the previous fiscal year-end?

**c.** How much of the inventory was finished goods?

## Decision-Making Across the Organization

**CT6.5** On April 10, 2020, fire damaged the office and warehouse of Corvet Company. Most of the accounting records were destroyed, but the following account balances were determined as of March 31, 2020: Inventory (January 1, 2020), $80,000; Sales Revenue (January 1–March 31, 2020), $180,000; Purchases (January 1–March 31, 2020), $94,000.

The company's fiscal year ends on December 31. It uses a periodic inventory system.

From an analysis of the April bank statement, you discover cancelled checks of $4,200 for cash purchases during the period April 1–10. Deposits during the same period totaled $18,500. Of that amount, 60% were collections on accounts receivable, and the balance was cash sales.

Correspondence with the company's principal suppliers revealed $12,400 of purchases on account from April 1 to April 10. Of that amount, $1,600 was for merchandise in transit on April 10 that was shipped FOB destination.

Correspondence with the company's principal customers produced acknowledgments of credit sales totaling $37,000 from April 1 to April 10. It was estimated that $5,600 of credit sales will never be acknowledged or recovered from customers.

Corvet Company reached an agreement with the insurance company that its fire-loss claim should be based on the average of the gross profit rates for the preceding 2 years. The financial statements for 2018 and 2019 showed the following data.

| | 2019 | 2018 |
|---|---|---|
| Net sales | $600,000 | $480,000 |
| Cost of goods purchased | 404,000 | 356,000 |
| Beginning inventory | 60,000 | 40,000 |
| Ending inventory | 80,000 | 60,000 |

Inventory with a cost of $17,000 was salvaged from the fire.

### Instructions

With the class divided into groups, answer the following.

**a.** Determine the balances in (1) Sales Revenue and (2) Purchases at April 10.

***b.** Determine the average gross profit rate for the years 2018 and 2019. (*Hint:* Find the gross profit rate for each year and divide the sum by 2.)

***c.** Determine the inventory loss as a result of the fire, using the gross profit method.

## Communication Activity

**CT6.6** You are the controller of Small Toys Inc. Pamela Bames, the president, recently mentioned to you that she found an error in the 2019 financial statements which she believes has corrected itself. She determined, in discussions with the Purchasing Department, that 2019 ending inventory was overstated by $1 million. Pamela says that the 2020 ending inventory is correct. Thus, she assumes that 2020 income is correct. Pamela says to you, "What happened has happened—there's no point in worrying about it anymore."

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### Instructions

You conclude that Pamela is incorrect. Write a brief, tactful memo to Pamela, clarifying the situation.

## All About You

**CT6.7** Some of the largest business frauds ever perpetrated have involved the misstatement of inventory. Two classics were at **Leslie Fay** and **McKesson Corporation**.

### Instructions

There is considerable information regarding inventory frauds available on the Internet. Search for information about one of the two cases mentioned above, or inventory fraud at any other company, and prepare a short explanation of the nature of the inventory fraud.

## FASB Codification Activity

**CT6.8** If your school has a subscription to the FASB Codification, log in and prepare responses to the following.

### Instructions

**a.** The primary basis for accounting for inventories is cost. How is cost defined in the Codification?

**b.** What does the Codification state regarding the use of consistency in the selection or employment of a basis for inventory?

# A Look at IFRS

**LEARNING OBJECTIVE 7**

Compare the accounting for inventories under GAAP and IFRS.

The major IFRS requirements related to accounting and reporting for inventories are the same as GAAP. The major difference is that IFRS prohibits the use of the LIFO cost flow assumption.

## Key Points

Following are the key similarities and differences between GAAP and IFRS related to inventories.

### Similarities

- IFRS and GAAP account for inventory acquisitions at historical cost and value inventory at the lower-of-cost-or-net realizable value subsequent to acquisition.
- Who owns the goods—goods in transit or consigned goods—as well as the costs to include in inventory are essentially accounted for the same under IFRS and GAAP.

### Differences

- The requirements for accounting for and reporting inventories are more principles-based under IFRS. That is, GAAP provides more detailed guidelines in inventory accounting.
- A major difference between IFRS and GAAP relates to the LIFO cost flow assumption. GAAP permits the use of LIFO for inventory valuation. IFRS prohibits its use. FIFO and average-cost are the only two acceptable cost flow assumptions permitted under IFRS. Both sets of standards permit specific identification where appropriate.

## Looking to the Future

One convergence issue that will be difficult to resolve relates to the use of the LIFO cost flow assumption. As indicated, IFRS specifically prohibits its use. Conversely, the LIFO cost flow assumption is widely used in the United States because of its favorable tax advantages. In addition, many argue that LIFO from a financial reporting point of view provides a better matching of current costs against revenue and, therefore, enables companies to compute a more realistic income.

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# IFRS Practice

## IFRS Self-Test Questions

1. Which of the following should **not** be included in the inventory of a company using IFRS?
   **a.** Goods held on consignment from another company.
   **b.** Goods shipped on consignment to another company.
   **c.** Goods in transit from another company shipped FOB shipping point.
   **d.** All of the above are included in inventory.
2. Which method of inventory costing is prohibited under IFRS?
   **a.** Specific identification.
   **b.** LIFO.
   **c.** FIFO.
   **d.** Average-cost.

## IFRS Exercises

**IFRS6.1** Briefly describe some of the similarities and differences between GAAP and IFRS with respect to the accounting for inventories.

**IFRS6.2** LaTour Inc. is based in France and prepares its financial statements (in euros) in accordance with IFRS. In 2020, it reported cost of goods sold of €578 million and average inventory of €154 million. Briefly discuss how analysis of LaTour's inventory turnover (and comparisons to a company using GAAP) might be affected by differences in inventory accounting between IFRS and GAAP.

## International Financial Reporting Problem: Louis Vuitton

**IFRS6.3** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

### Instructions

Using the notes to the company's financial statements, answer the following questions.

**a.** What cost flow assumption does the company use to value inventory other than wine?

**b.** What amount of goods purchased for retail and finished products did the company report at December 31, 2015?

### Answers to IFRS Self-Test Questions

**1.** a **2.** b

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# Accounting Information Systems

## Chapter Preview

As the following Feature Story demonstrates, a reliable information system is a necessity for any company. Whether companies use pen, pencil, or computers in maintaining accounting records, certain principles and procedures apply. The purpose of this chapter is to explain and illustrate these features.

## Feature Story

### QuickBooks® Helps This Retailer Sell Guitars

Starting a small business requires many decisions. For example, you have to decide where to locate, how much space you need, how much inventory to have, how many employees to hire, and where to advertise. Small business owners are typically so concerned about the product and sales side of their business that they often do not give enough thought to something that is also critical to their success—how to keep track of financial results.

Small business owners today can choose either manual or computerized accounting systems. For example, Paul and Laura West were the owners of the first independent dealership of Carvin guitars and professional audio equipment. When they founded their company in Sacramento, California, they decided to purchase a computerized accounting system that would integrate many aspects of their retail operations. They wanted to use their accounting software to manage their inventory of guitars and amplifiers, enter sales, record and report financial data, and process credit card and debit card transactions. They evaluated a number of options and chose QuickBooks® by **Intuit Inc.**

QuickBooks®, like most other popular software packages, has programs designed for the needs of a specific type of business, which in this case is retailing. This QuickBooks® retailing package automatically collects sales information from its point-of-sale scanning devices. It also keeps track of inventory levels and automatically generates purchase orders for popular

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items when re-order points are reached. It even supports specialized advertising campaigns.

For example, QuickBooks® compiled a customer database from which the Wests sent out targeted direct mailings to potential customers. The computerized system also enabled data files to be emailed to the company's accountant. This kept down costs and made it easier and more efficient for the Wests to generate financial reports as needed. The Wests believed that the investment in the computerized system saved them time and money, and allowed them to spend more time on other aspects of their business.

**Source:** Intuit Inc., "QuickBooks® and ProAdvisor® Help Make Guitar Store a Hit," *Journal of Accountancy* (May 2006), p. 101.

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Explain the basic concepts of an accounting information system. | • Computerized accounting systems<br>• Manual accounting systems | **DO IT! 1** Basic AIS Concepts |
| **LO 2** Describe the nature and purpose of a subsidiary ledger. | • Subsidiary ledger example<br>• Advantages of subsidiary ledgers | **DO IT! 2** Subsidiary Ledgers |
| **LO 3** Record transactions in special journals. | • Sales journal<br>• Cash receipts journal<br>• Purchases journal<br>• Cash payments journal<br>• Effects of special journals<br>• Cyber security | **DO IT! 3** Special Journals |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

# Overview of Accounting Information Systems

### LEARNING OBJECTIVE 1

Explain the basic concepts of an accounting information system.

The **accounting information system** collects and processes transaction data and communicates financial information to decision-makers. It includes each of the steps in the accounting cycle that you studied in earlier chapters. It also includes the documents that provide evidence of the transactions, and the records, trial balances, worksheets, and financial statements that result. An **accounting system** may be either manual or computerized. Most businesses use some sort of computerized accounting system, whether it is an off-the-shelf system for small businesses, like QuickBooks® or Sage 50, or a more complex custom-made system.

Efficient and effective accounting information systems are based on certain basic principles. These principles, as described in **Illustration 7.1**, are (1) cost-effectiveness, (2) usefulness, and (3) flexibility. If the accounting system is cost-effective, provides useful output, and

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has the flexibility to meet future needs, it can contribute to both individual and organizational goals.

**Cost-Effectiveness**

The accounting system must be cost-effective. Benefits of information must outweigh the costs of providing it.

**Useful Output**

To be useful, information must be understandable, relevant, reliable, timely, and accurate. Designers of accounting systems must consider the needs and knowledge of various users.

**Flexibility**

The accounting system should accommodate a variety of users and changing information needs. The system should be sufficiently flexible to meet the resulting changes in the demands made upon it.

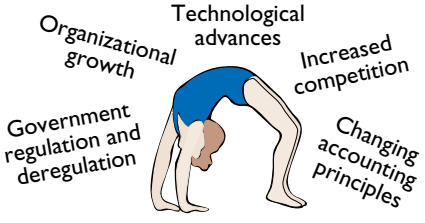


**ILLUSTRATION 7.1**

**Principles of an efficient and effective accounting information system**

## Computerized Accounting Systems

Many small businesses use a computerized general ledger accounting system. **General ledger accounting systems** are software programs that integrate the various accounting functions related to sales, purchases, receivables, payables, cash receipts and disbursements, and payroll. They also generate financial statements. Computerized systems have a number of advantages over manual systems. First, the company typically enters data only once in a computerized system. Second, because the computer does most steps automatically, it eliminates many errors resulting from human intervention in a manual system, such as errors in posting or preparation of financial statements. Computerized systems also provide up-to-the-minute information. More timely information often results in better business decisions. Many different general ledger software packages are available.

### Choosing a Software Package

To identify the right software for your business, you must understand your company's operations. For example, consider its needs with regard to inventory, billing, payroll, and cash management. In addition, the company might have specific needs that are not supported by all software systems. For example, you might want to track employees' hours on individual jobs or to extract information for determining sales commissions. Choosing the right system is critical because installation of even a basic system is time-consuming, and learning a new system will require many hours of employee time.

### Entry-Level Software

Software publishers tend to classify businesses into groups based on revenue and the number of employees. Companies with revenues of less than $5 million and up to 20 employees generally

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use **entry-level programs**. The two leading entry-level programs are **Intuit**'s QuickBooks® and **The Sage Group**'s Sage 50. These programs control more than 90% of the market. Each of these entry-level programs comes in many different industry-specific versions. For example, some are designed for very specific industry applications such as restaurants, retailing, construction, manufacturing, or nonprofit.

Quality entry-level packages typically involve more than recording transactions and preparing financial statements. Here are some common features and benefits:

- **Easy data access and report preparation.** Users can easily access information related to specific customers or suppliers. For example, you can view all transactions, invoices, payments, as well as contact information for a specific client.
- **Audit trail.** As a result of the Sarbanes-Oxley Act, companies are now far more concerned that their accounting system minimizes opportunities for fraud. Many programs provide an "audit trail" that enables the tracking of all transactions.
- **Internal controls.** Some systems have an internal accounting review that identifies suspicious transactions or likely mistakes such as wrong account numbers or duplicate transactions (see **Ethics Note**).
- **Customization.** This feature enables the company to create data fields specific to the needs of its business.
- **Network-compatibility.** Multiple users in the company can access the system at the same time.

**ETHICS NOTE**

**Entire books and movies have used cyber attacks as a major theme. Most programmers would agree that ensuring cyber security is the most difficult and time-consuming phase of their jobs.**

## Enterprise Resource Planning Systems

**Enterprise resource planning (ERP) systems** are typically used by manufacturing companies with more than 500 employees and $500 million in sales. The best-known of these systems are **SAP AG**'s SAP ERP (the most widely used) and **Oracle**'s ERP. ERP systems go far beyond the functions of an entry-level general ledger package. They integrate all aspects of the organization, including accounting, sales, human resource management, and manufacturing. Because of the complexity of an ERP system, implementation can take three years and cost five times as much as the purchase price of the system. Purchase and implementation of ERP systems can cost from $250,000 to as much as $50 million for the largest multinational corporations.

## Ethics Insight

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### Curbing Fraudulent Activity with Software

The Sarbanes-Oxley Act (SOX) requires that companies demonstrate that they have adequate controls in place to detect significant fraudulent behavior by employees. The SOX requirements have created a huge market for software that can monitor and trace every recorded transaction and adjusting entry. This enables companies to pinpoint who used the accounting system and when they used it. These systems also require "electronic signatures" by employees for all significant transactions. Such signatures verify that employees have followed all required procedures, and that all actions are properly authorized. One firm that specializes in compliance software had 10 clients prior to SOX and 250 after SOX.

Note that small businesses have no standards like SOX and often do not have the resources to implement a fraud–prevention system. As a result, small businesses lose nearly $630 billion to fraud each year. To address this problem, more sophisticated software is being designed for small business fraud prevention.

**Sources:** W. M. Bulkeley and C. Forelle, "Anti-Crime Program: How Corporate Scandals Gave Tech Firms a New Business Line," *Wall Street Journal* (December 9, 2005), p. A1; and "New Software Fights Small Business Fraud," *FOX Business* (August 9, 2013).

**Why might this software help reduce fraudulent activity by employees? (Go to WileyPLUS for this answer and additional questions.)**

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## Manual Accounting Systems

In **manual accounting systems**, someone performs each of the steps in the accounting cycle by hand. For example, someone manually enters each accounting transaction in the journal and manually posts each to the ledger. Other manual computations must be made to obtain ledger account balances and to prepare a trial balance and financial statements. In the remainder of this chapter, we illustrate the use of a manual system.

You might be wondering, "Why cover manual accounting systems if the real world uses computerized systems?" First, small businesses still abound. Most of them begin operations with manual accounting systems and convert to computerized systems as the business grows. You may work in a small business or start your own someday, so it is useful to know how a manual system works. Second, to understand what computerized accounting systems do, you also need to understand manual accounting systems.

The manual accounting system represented in the first six chapters of this textbook is satisfactory in a company with a low volume of transactions. However, in most companies, it is necessary to add additional ledgers and journals to the accounting system to record transaction data efficiently.

### DO IT! 1 | Basic AIS Concepts

Indicate whether the following statements are true or false. If false, indicate how to correct the statement.

1. An accounting information system collects and processes transaction data and communicates financial information to decision-makers.
2. A company typically enters data only once in a manual accounting system.
3. Enterprise resource planning (ERP) systems are typically used by companies with revenues of less than $5 million and up to 20 employees.

**ACTION PLAN**

- Understand the principles of an effective accounting information system.
- Recognize the types of available general ledger software packages.

**Solution**

**1.** True. **2.** False. A company typically enters data only once in a computerized accounting system. **3.** False. Enterprise resource planning (ERP) systems are typically used by manufacturing companies with more than 500 employees and $500 million in sales.

Related exercise material: **BE7.1, BE7.2, BE7.3, and DO IT! 7.1.**

## Subsidiary Ledgers

**LEARNING OBJECTIVE 2**

Describe the nature and purpose of a subsidiary ledger.

Imagine a business that has several thousand charge (credit) customers and shows the transactions with these customers in only one general ledger account—Accounts Receivable. It would be nearly impossible to determine the balance owed by an individual customer at any specific time. Similarly, the amount payable to one creditor would be difficult to locate quickly from a single Accounts Payable account in the general ledger.

Instead, companies use subsidiary ledgers to keep track of individual balances. A **subsidiary ledger** is a group of accounts with a common characteristic (for example, all accounts receivable). It is an addition to and an expansion of the general ledger. The subsidiary ledger frees the general ledger from the details of individual balances.

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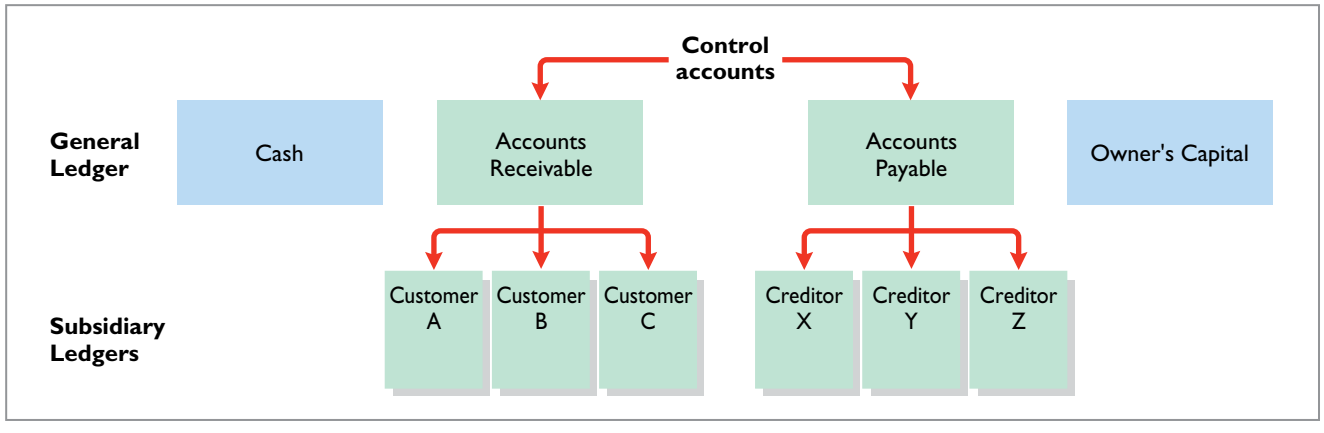
Two common subsidiary ledgers are as follows.

1. The **accounts receivable** (or **customers'**) **subsidiary ledger**, which collects transaction data of individual customers.
2. The **accounts payable** (or **creditors'**) **subsidiary ledger**, which collects transaction data of individual creditors.

In each of these subsidiary ledgers, companies usually arrange individual accounts in alphabetical order.

A general ledger account summarizes the detailed data from a subsidiary ledger. For example, the detailed data from the accounts receivable subsidiary ledger are summarized in Accounts Receivable in the general ledger. The general ledger account that summarizes subsidiary ledger data is called a **control account**. **Illustration 7.2** presents an overview of the relationship of subsidiary ledgers to the general ledger. There, the general ledger control accounts and subsidiary ledger accounts are in green. Note that Cash and Owner's Capital in this illustration are not control accounts because there are no subsidiary ledger accounts related to these accounts.

**ILLUSTRATION 7.2** **Relationship of general ledger and subsidiary ledgers**




**At the end of an accounting period, each general ledger control account balance must equal the composite balance of the individual accounts in the related subsidiary ledger.** For example, the balance in Accounts Payable in Illustration 7.2 must equal the total of the subsidiary balances of Creditors X + Y + Z.

## Subsidiary Ledger Example

**Illustration 7.3** lists credit sales and collections on account for Pujols Company.

**ILLUSTRATION 7.3**
**Sales and collection transactions**

| Credit Sales | | | Collections on Account | | |
|---|---|---|---|---|---|
| Jan. 10 | Aaron Co. | $ 6,000 | Jan. 19 | Aaron Co. | $4,000 |
| 12 | Branden Inc. | 3,000 | 21 | Branden Inc. | 3,000 |
| 20 | Caron Co. | 3,000 | 29 | Caron Co. | 1,000 |
| | | $12,000 | | | $8,000 |

**Illustration 7.4** provides an example of a control account and subsidiary ledger for Pujols Company. (Due to space considerations, the explanation column in these accounts is not

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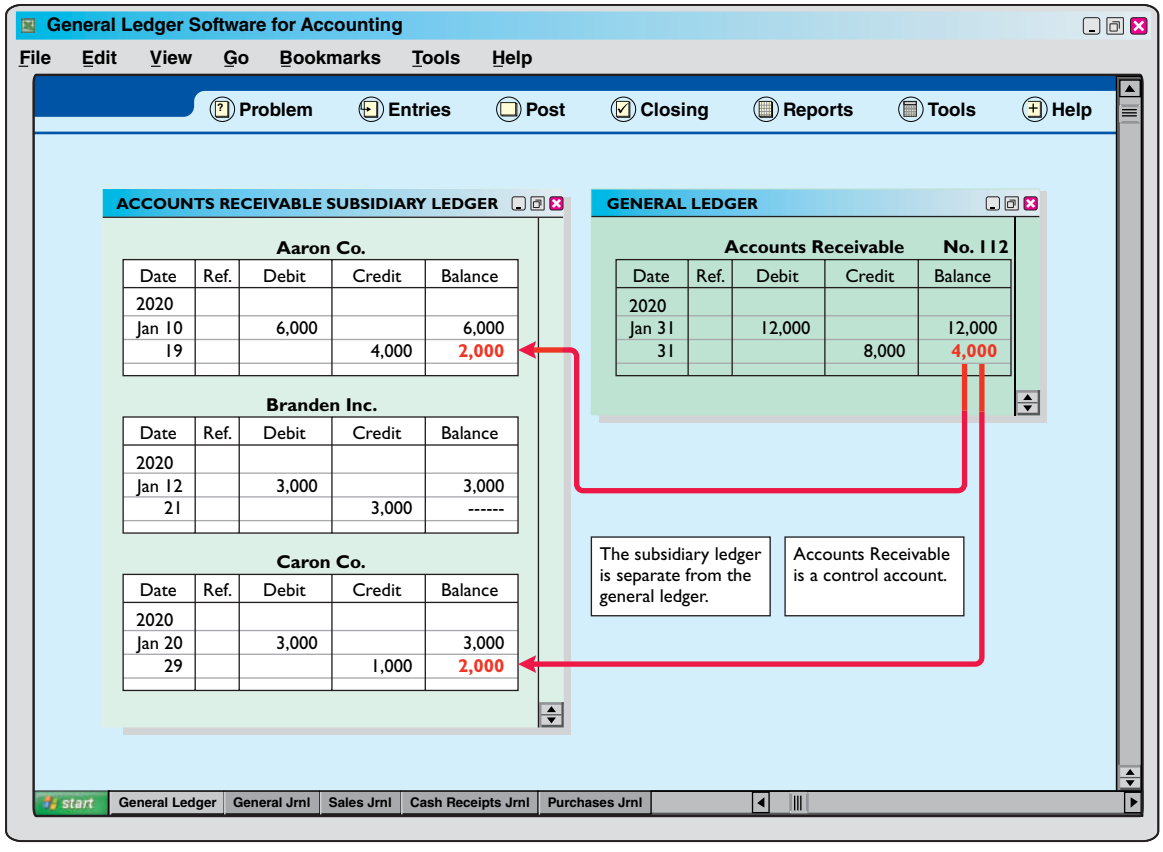
**ILLUSTRATION 7.4** Relationship between general and subsidiary ledgers


General Ledger Software for Accounting
File Edit View Go Bookmarks Tools Help
Problem Entries Post Closing Reports Tools Help
ACCOUNTS RECEIVABLE SUBSIDIARY LEDGER
Aaron Co.
Date Ref. Debit Credit Balance
2020
Jan 10 6,000 6,000
19 4,000 2,000
Branden Inc.
Date Ref. Debit Credit Balance
2020
Jan 12 3,000 3,000
21 3,000 ------
Caron Co.
Date Ref. Debit Credit Balance
2020
Jan 20 3,000 3,000
29 1,000 2,000
GENERAL LEDGER
Accounts Receivable No. 112
Date Ref. Debit Credit Balance
2020
Jan 31 12,000 12,000
31 8,000 4,000
The subsidiary ledger is separate from the general ledger.
Accounts Receivable is a control account.
start General Ledger General Jrnl Sales Jrnl Cash Receipts Jrnl Purchases Jrnl

shown in this and subsequent illustrations.) Illustration 7.4 is based on the transactions listed in Illustration 7.3.

Pujols can reconcile the total debits ($12,000) and credits ($8,000) in Accounts Receivable in the general ledger to the detailed debits and credits in the subsidiary accounts. Also, the balance of $4,000 in the control account agrees with the total of the balances in the individual accounts (Aaron Co. $2,000 + Branden Inc. $0 + Caron Co. $2,000) in the subsidiary ledger.

As Illustration 7.4 shows, companies make monthly postings to the control accounts in the general ledger. This practice allows them to prepare monthly financial statements. Companies post to the individual accounts in the subsidiary ledger daily. Daily posting ensures that account information is current. This enables the company to monitor credit limits, bill customers, and answer inquiries from customers about their account balances.

## Advantages of Subsidiary Ledgers

Subsidiary ledgers have several advantages:

1. **They show in a single account transactions affecting one customer or one creditor**, thus providing up-to-date information on specific account balances.
2. **They free the general ledger of excessive details.** As a result, a trial balance of the general ledger does not contain vast numbers of individual account balances.
3. **They help locate errors in individual accounts** by reducing the number of accounts in one ledger and by using control accounts.
4. **They make possible a division of labor** in posting. One employee can post to the general ledger while someone else posts to the subsidiary ledgers.

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## Accounting Across the Organization

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### "I'm John Smith, a.k.a. 13695071642"

Rather than relying on customer or creditor names in a subsidiary ledger, a computerized system expands the account number of the control account in a prespecified manner. For example, if the control account Accounts Receivable was numbered 10010, the first account in the accounts receivable subsidiary ledger might be numbered 10010–0001. Most systems allow inquiries about specific accounts in the subsidiary ledger (by account number) or about the control account. With the latter, the system would automatically total all the subsidiary accounts whenever an inquiry to the control account was made.

**Why use numbers to identify names in a computerized system? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 2 | Subsidiary Ledgers

Presented below is information related to Sims Company for its first month of operations. Determine the balances that appear in the accounts payable subsidiary ledger. What Accounts Payable balance appears in the general ledger at the end of January?

| Credit Purchases | | | Cash Paid | | |
|---|---|---|---|---|---|
| Jan. 5 | Devon Co. | $11,000 | Jan. 9 | Devon Co. | $7,000 |
| 11 | Shelby Co. | 7,000 | 14 | Shelby Co. | 2,000 |
| 22 | Taylor Co. | 14,000 | 27 | Taylor Co. | 9,000 |

**ACTION PLAN**

- **Subtract cash paid from credit purchases to determine the balances in the accounts payable subsidiary ledger.**
- **Sum the individual balances to determine the Accounts Payable balance.**

### Solution

Subsidiary ledger balances:

Devon Co.: $4,000 ($11,000 – $7,000)

Shelby Co.: $5,000 ($7,000 – $2,000)

Taylor Co.: $5,000 ($14,000 – $9,000)

General ledger Accounts Payable balance: $14,000 ($4,000 + $5,000 + $5,000)

Related exercise material: **BE7.4, BE7.5, DO IT! 7.2, E7.1, E7.2, E7.3, E7.4, and E7.5.**

# Special Journals

**LEARNING OBJECTIVE 3**

Record transactions in special journals.

So far, you have learned to journalize transactions in a two-column general journal and post each entry to the general ledger. This procedure is satisfactory in only very small companies. To expedite journalizing and posting, most companies use special journals **in addition to the general journal**.

Companies use **special journals** to record similar types of transactions. Examples are all sales of merchandise on account or all cash receipts. The types of transactions

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that occur frequently in a company determine what special journals the company uses. Most merchandising companies record daily transactions using the journals shown in **Illustration 7.5**.

**ILLUSTRATION 7.5** **Use of special journals and the general journal**

| Sales Journal | Cash Receipts Journal | Purchases Journal | Cash Payments Journal | General Journal |
|---|---|---|---|---|
| Used for: All sales of merchandise on account | Used for: All cash received (including cash sales) | Used for: All purchases of merchandise on account | Used for: All cash paid (including cash purchases) | Used for: Transactions that cannot be entered in a special journal, including correcting, adjusting, and closing entries |

**If a transaction cannot be recorded in a special journal, the company records it in the general journal.** For example, if a company had special journals for only the four types of transactions listed above, it would record purchase returns and allowances that do not affect cash in the general journal. Similarly, **correcting, adjusting, and closing entries are recorded in the general journal**. In some situations, companies might use special journals other than those listed above. For example, when sales returns and allowances that do not affect cash are frequent, a company might use a special journal to record these transactions.

Special journals **permit greater division of labor** because several people can record entries in different journals at the same time. For example, one employee may journalize all cash receipts, and another may journalize all credit sales. Also, the use of special journals **reduces the time needed to complete the posting process**. With special journals, companies may post some accounts monthly instead of daily, as we will illustrate later in the chapter (see **Helpful Hint**). On the following pages, we discuss the four special journals shown in Illustration 7.5.

**HELPFUL HINT**

**Postings are also made daily to individual ledger accounts in the inventory subsidiary ledger to maintain a perpetual inventory.**

# Sales Journal

In the **sales journal**, companies record **sales of merchandise on account**. Cash sales of merchandise go in the cash receipts journal. Credit sales of assets other than merchandise go in the general journal.

## Journalizing Credit Sales

To demonstrate use of a sales journal, we will use data for Karns Wholesale Supply, which uses a **perpetual inventory system**. Under this system, each entry in the sales journal results in one entry **at selling price** and another entry **at cost**. The entry at selling price is a debit to Accounts Receivable (a control account) and a credit of equal amount to Sales Revenue. The entry at cost is a debit to Cost of Goods Sold and a credit of equal amount to Inventory (a control account). Using a sales journal with two amount columns, the company can show on only one line a sales transaction at both selling price and cost. **Illustration 7.6** shows this two-column sales journal of Karns Wholesale Supply, using assumed credit sales transactions (for sales invoices 101–107).

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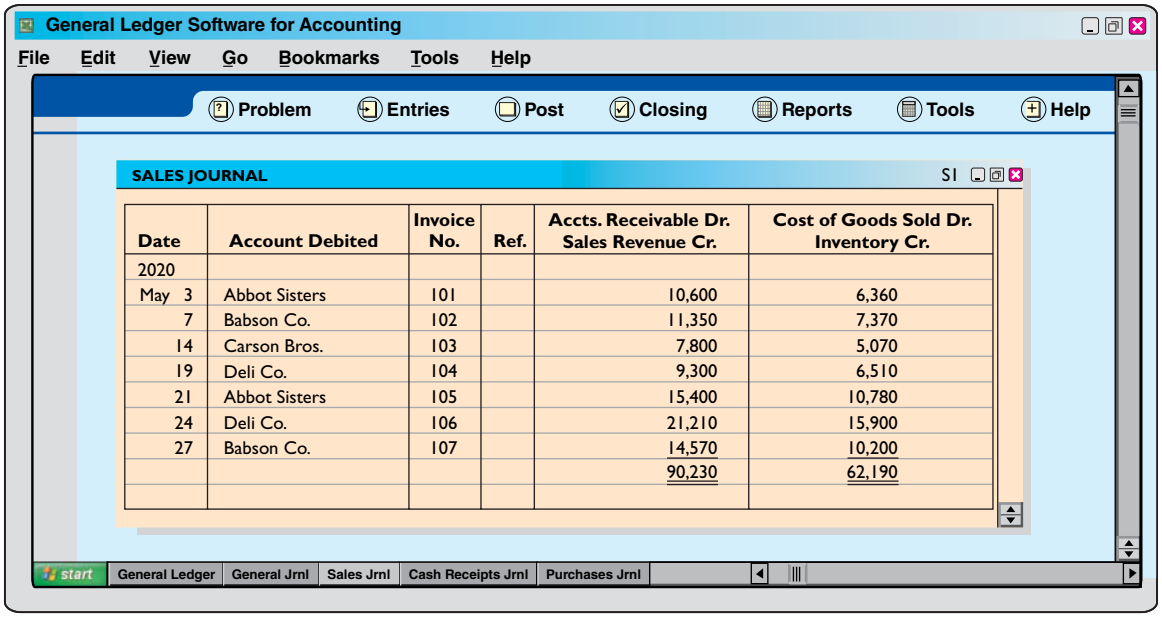
**ILLUSTRATION 7.6** **Journalizing the sales journal—perpetual inventory system**




| Date | Account Debited | Invoice No. | Ref. | Accts. Receivable Dr. Sales Revenue Cr. | Cost of Goods Sold Dr. Inventory Cr. |
|---|---|---|---|---|---|
| 2020 | | | | | |
| May 3 | Abbot Sisters | 101 | | 10,600 | 6,360 |
| 7 | Babson Co. | 102 | | 11,350 | 7,370 |
| 14 | Carson Bros. | 103 | | 7,800 | 5,070 |
| 19 | Deli Co. | 104 | | 9,300 | 6,510 |
| 21 | Abbot Sisters | 105 | | 15,400 | 10,780 |
| 24 | Deli Co. | 106 | | 21,210 | 15,900 |
| 27 | Babson Co. | 107 | | 14,570 | 10,200 |
| | | | | 90,230 | 62,190 |

Note that, unlike the general journal, an explanation is not required for each entry in a special journal. Also, the use of prenumbered invoices ensures that all invoices are journalized and no invoices are duplicated. Finally, the reference (Ref.) column is not used in journalizing. It is used in posting the sales journal, as explained in the next section.

## Posting the Sales Journal

Companies make daily postings from the sales journal **to the individual accounts receivable** in the subsidiary ledger. Posting **to the general ledger** is done **monthly**. Illustration 7.7 shows both the daily and monthly postings.

A check mark (✓) is inserted in the reference column to indicate that the daily posting to the customer's account has been made. If the subsidiary ledger accounts were numbered, the account number would be entered in place of the check mark. At the end of the month, Karns posts the column totals of the sales journal to the general ledger. Here, the column totals are as follows: From the selling-price column, a debit of $90,230 to Accounts Receivable (account No. 112) and a credit of $90,230 to Sales Revenue (account No. 401); from the cost column, a debit of $62,190 to Cost of Goods Sold (account No. 505) and a credit of $62,190 to Inventory (account No. 120). Karns inserts the account numbers below the column totals to indicate that the postings have been made. In both the general ledger and subsidiary ledger accounts, the reference **S1** indicates that the posting came from page 1 of the sales journal.

## Proving the Ledgers

The next step is to "prove" the ledgers. To do so, Karns must determine two things: (1) The total of the general ledger debit balances must equal the total of the general ledger credit balances. (2) The sum of the subsidiary ledger balances must equal the balance in the control account. Illustration 7.8 shows the proof of the postings from the sales journal to the general and subsidiary ledgers.

## Advantages of the Sales Journal

The use of a special journal to record sales on account has a number of advantages. First, the one-line entry for each sales transaction saves time. In the sales journal, it is not necessary to write out the four account titles for each transaction. Second, only totals, rather than individual entries, are posted to the general ledger. This saves posting time and reduces the possibilities

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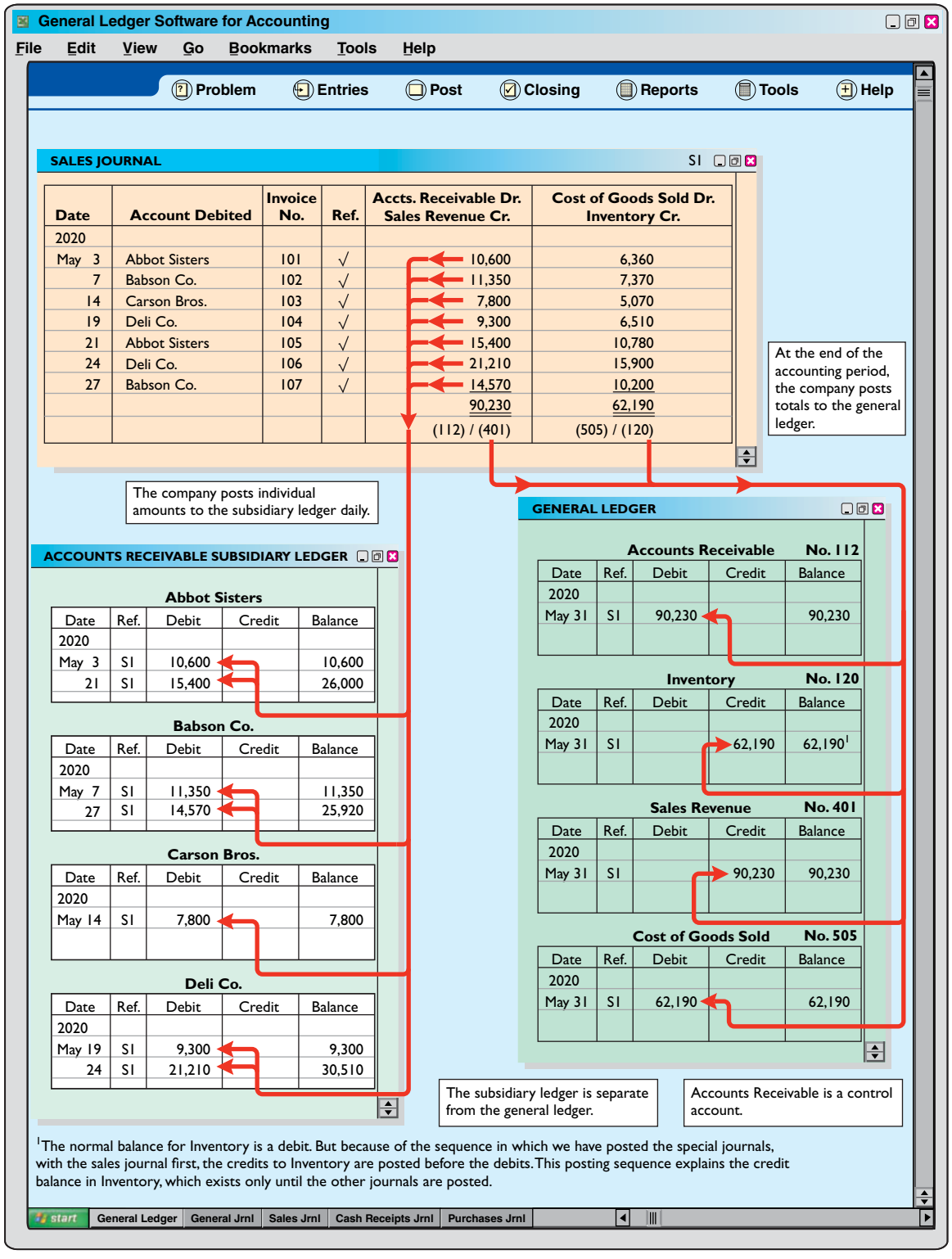
**ILLUSTRATION 7.7** Posting the sales journal


General Ledger Software for Accounting
File Edit View Go Bookmarks Tools Help
Problem Entries Post Closing Reports Tools Help
SALES JOURNAL S1
Date | Account Debited | Invoice No. | Ref. | Accts. Receivable Dr. Sales Revenue Cr. | Cost of Goods Sold Dr. Inventory Cr.
2020
May 3 Abbot Sisters 101 √ 10,600 6,360
7 Babson Co. 102 √ 11,350 7,370
14 Carson Bros. 103 √ 7,800 5,070
19 Deli Co. 104 √ 9,300 6,510
21 Abbot Sisters 105 √ 15,400 10,780
24 Deli Co. 106 √ 21,210 15,900
27 Babson Co. 107 √ 14,570 10,200
90,230 62,190
(112) / (401) (505) / (120)
At the end of the accounting period, the company posts totals to the general ledger.
The company posts individual amounts to the subsidiary ledger daily.
GENERAL LEDGER
Accounts Receivable No. 112
Date Ref. Debit Credit Balance
2020
May 31 S1 90,230 90,230
Inventory No. 120
Date Ref. Debit Credit Balance
2020
May 31 S1 62,190 62,190[1]
Sales Revenue No. 401
Date Ref. Debit Credit Balance
2020
May 31 S1 90,230 90,230
Cost of Goods Sold No. 505
Date Ref. Debit Credit Balance
2020
May 31 S1 62,190 62,190
ACCOUNTS RECEIVABLE SUBSIDIARY LEDGER
Abbot Sisters
Date Ref. Debit Credit Balance
2020
May 3 S1 10,600 10,600
21 S1 15,400 26,000
Babson Co.
Date Ref. Debit Credit Balance
2020
May 7 S1 11,350 11,350
27 S1 14,570 25,920
Carson Bros.
Date Ref. Debit Credit Balance
2020
May 14 S1 7,800 7,800
Deli Co.
Date Ref. Debit Credit Balance
2020
May 19 S1 9,300 9,300
24 S1 21,210 30,510
The subsidiary ledger is separate from the general ledger.
Accounts Receivable is a control account.
[1]The normal balance for Inventory is a debit. But because of the sequence in which we have posted the special journals, with the sales journal first, the credits to Inventory are posted before the debits. This posting sequence explains the credit balance in Inventory, which exists only until the other journals are posted.
start General Ledger General Jrnl Sales Jrnl Cash Receipts Jrnl Purchases Jrnl

of errors in posting. Finally, a division of labor results because one individual can take responsibility for the sales journal.

## Cash Receipts Journal

In the **cash receipts journal**, companies record all receipts of cash. The most common types of cash receipts are cash sales of merchandise and collections of accounts receivable. Many

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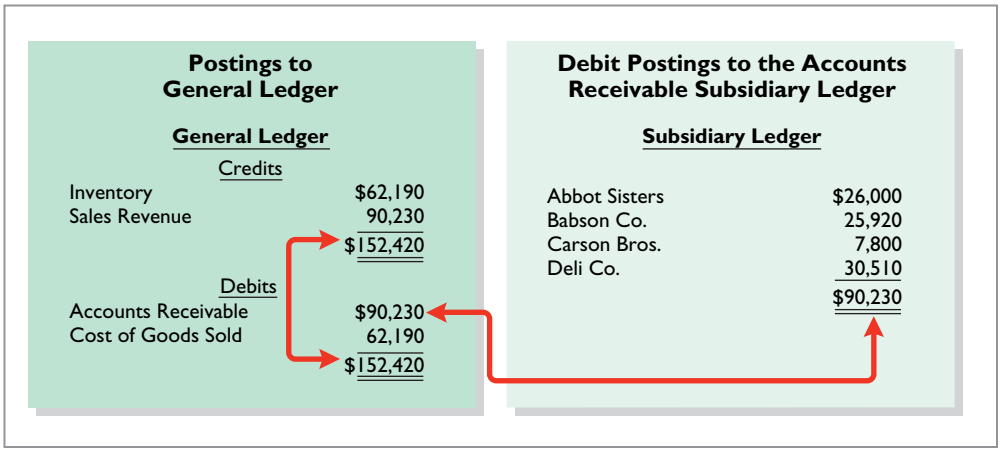
**ILLUSTRATION 7.8**

**Proving the equality of the postings from the sales journal**




other possibilities exist, such as receipt of money from bank loans and cash proceeds from disposal of equipment. A one- or two-column cash receipts journal would not have space enough for all possible cash receipt transactions. Therefore, companies use a multiple-column cash receipts journal.

Generally, a cash receipts journal includes the following columns: debit columns for Cash and Sales Discounts, and credit columns for Accounts Receivable, Sales Revenue, and "Other Accounts." Companies use the Other Accounts category when the cash receipt does not involve a cash sale or a collection of accounts receivable. Under a perpetual inventory system, each sales entry also is accompanied by an entry that debits Cost of Goods Sold and credits Inventory for the cost of the merchandise sold. **Illustration 7.9** shows a six-column cash receipts journal.

Companies may use additional credit columns if these columns significantly reduce postings to a specific account. For example, a loan company such as **Household International** receives thousands of cash collections from customers. Using separate credit columns for Loans Receivable and Interest Revenue, rather than the Other Accounts credit column, would reduce postings.

## Journalizing Cash Receipts Transactions

To illustrate the journalizing of cash receipts transactions, we will continue with the May transactions of Karns Wholesale Supply. Collections from customers relate to the entries recorded in the sales journal in Illustration 7.6. The entries in the cash receipts journal are based on the following cash receipts.

May 1 D. A. Karns makes an investment of $5,000 in the business.

7 Cash sales of merchandise total $1,900 (cost, $1,240).

10 Received a check for $10,388 from Abbot Sisters in payment of invoice No. 101 for $10,600 less a 2% discount.

12 Cash sales of merchandise total $2,600 (cost, $1,690).

17 Received a check for $11,123 from Babson Co. in payment of invoice No. 102 for $11,350 less a 2% discount.

22 Received cash by signing a note for $6,000.

23 Received a check for $7,644 from Carson Bros. in full for invoice No. 103 for $7,800 less a 2% discount.

28 Received a check for $9,114 from Deli Co. in full for invoice No. 104 for $9,300 less a 2% discount.

The following discussion provides further information about the columns in the cash receipts journal.

**Debit Columns:**

1. **Cash.** Karns enters in this column the amount of cash actually received in each transaction. The column total indicates the total cash receipts for the month.

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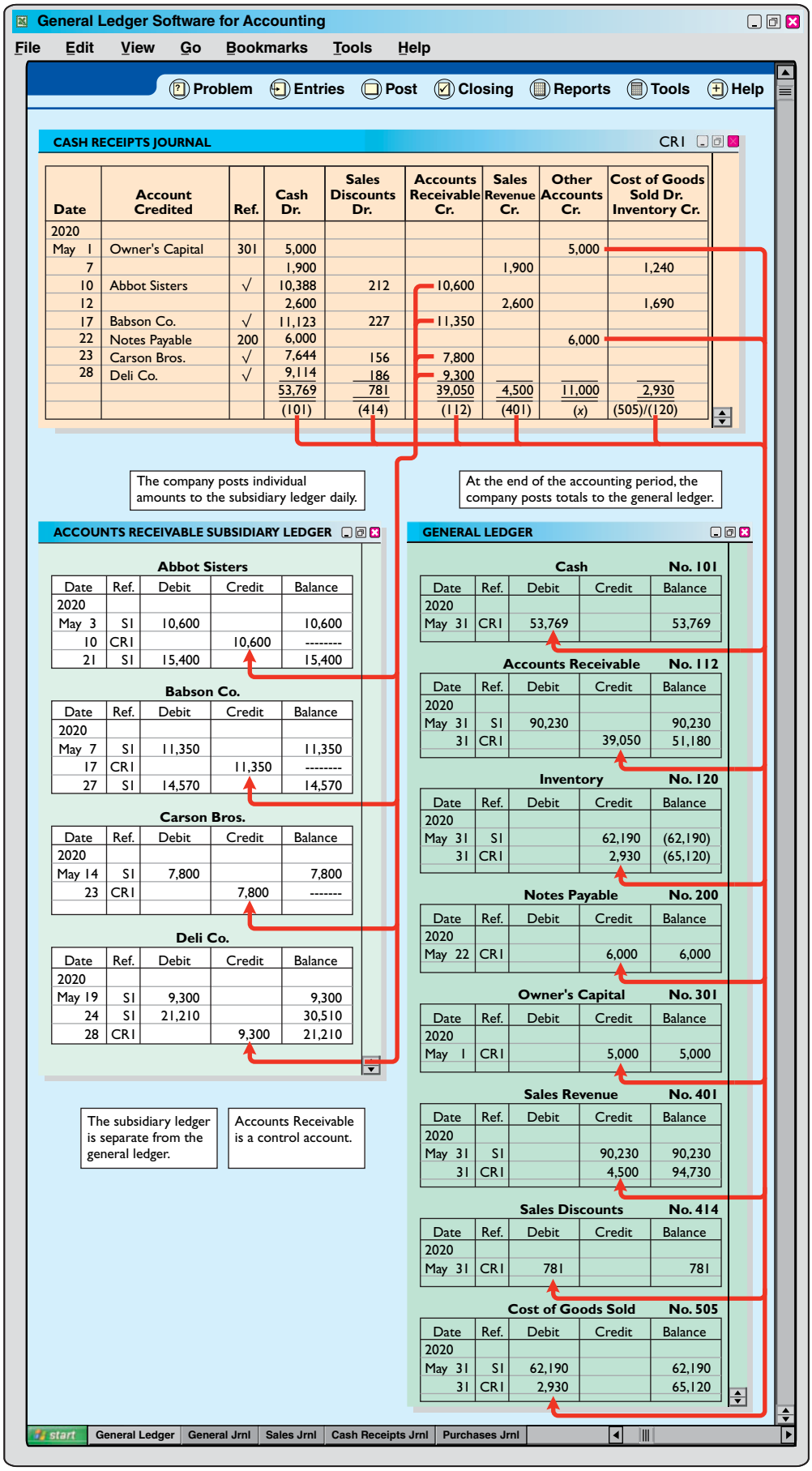
**ILLUSTRATION 7.9** Journalizing and posting the cash receipts journal


General Ledger Software for Accounting
File Edit View Go Bookmarks Tools Help
Problem Entries Post Closing Reports Tools Help
CASH RECEIPTS JOURNAL CR1
The company posts individual amounts to the subsidiary ledger daily.
At the end of the accounting period, the company posts totals to the general ledger.
ACCOUNTS RECEIVABLE SUBSIDIARY LEDGER
GENERAL LEDGER
The subsidiary ledger is separate from the general ledger.
Accounts Receivable is a control account.
start General Ledger General Jrnl Sales Jrnl Cash Receipts Jrnl Purchases Jrnl

**CASH RECEIPTS JOURNAL** CR1

| Date | Account Credited | Ref. | Cash Dr. | Sales Discounts Dr. | Accounts Receivable Cr. | Sales Revenue Cr. | Other Accounts Cr. | Cost of Goods Sold Dr. Inventory Cr. |
|---|---|---|---|---|---|---|---|---|
| 2020 | | | | | | | | |
| May 1 | Owner's Capital | 301 | 5,000 | | | | 5,000 | |
| 7 | | | 1,900 | | | 1,900 | | 1,240 |
| 10 | Abbot Sisters | √ | 10,388 | 212 | 10,600 | | | |
| 12 | | | 2,600 | | | 2,600 | | 1,690 |
| 17 | Babson Co. | √ | 11,123 | 227 | 11,350 | | | |
| 22 | Notes Payable | 200 | 6,000 | | | | 6,000 | |
| 23 | Carson Bros. | √ | 7,644 | 156 | 7,800 | | | |
| 28 | Deli Co. | √ | 9,114 | 186 | 9,300 | | | |
| | | | 53,769 | 781 | 39,050 | 4,500 | 11,000 | 2,930 |
| | | | (101) | (414) | (112) | (401) | (x) | (505)/(120) |

**ACCOUNTS RECEIVABLE SUBSIDIARY LEDGER**

**Abbot Sisters**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 3 | S1 | 10,600 | | 10,600 |
| 10 | CR1 | | 10,600 | -------- |
| 21 | S1 | 15,400 | | 15,400 |

**Babson Co.**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 7 | S1 | 11,350 | | 11,350 |
| 17 | CR1 | | 11,350 | -------- |
| 27 | S1 | 14,570 | | 14,570 |

**Carson Bros.**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 14 | S1 | 7,800 | | 7,800 |
| 23 | CR1 | | 7,800 | ------- |

**Deli Co.**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 19 | S1 | 9,300 | | 9,300 |
| 24 | S1 | 21,210 | | 30,510 |
| 28 | CR1 | | 9,300 | 21,210 |

**GENERAL LEDGER**

**Cash** No. 101

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 31 | CR1 | 53,769 | | 53,769 |

**Accounts Receivable** No. 112

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 31 | S1 | 90,230 | | 90,230 |
| 31 | CR1 | | 39,050 | 51,180 |

**Inventory** No. 120

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 31 | S1 | | 62,190 | (62,190) |
| 31 | CR1 | | 2,930 | (65,120) |

**Notes Payable** No. 200

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 22 | CR1 | | 6,000 | 6,000 |

**Owner's Capital** No. 301

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 1 | CR1 | | 5,000 | 5,000 |

**Sales Revenue** No. 401

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 31 | S1 | | 90,230 | 90,230 |
| 31 | CR1 | | 4,500 | 94,730 |

**Sales Discounts** No. 414

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 31 | CR1 | 781 | | 781 |

**Cost of Goods Sold** No. 505

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 31 | S1 | 62,190 | | 62,190 |
| 31 | CR1 | 2,930 | | 65,120 |

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**HELPFUL HINT**

A *subsidiary ledger* account is credited when the entry involves a collection of accounts receivable. A *general ledger* account is credited when the account is not shown in a special column (and an amount must be entered in the Other Accounts column). Otherwise, no account is shown in the "Account Credited" column.

2. **Sales Discounts.** Karns includes a Sales Discounts column in its cash receipts journal. By doing so, it does not need to enter sales discount items in the general journal. As a result, the cash receipts journal shows on one line the collection of an account receivable within the discount period.

**Credit Columns:**

3. **Accounts Receivable.** Karns uses the Accounts Receivable column to record cash collections on account (see **Helpful Hint**). The amount entered here is the amount to be credited to the individual customer's account.
4. **Sales Revenue.** The Sales Revenue column records all cash sales of merchandise. Cash sales of other assets (plant assets, for example) are not reported in this column.
5. **Other Accounts.** Karns uses the Other Accounts column whenever the credit is other than to Accounts Receivable or Sales Revenue. For example, in the first entry, Karns enters $5,000 as a credit to Owner's Capital. This column is often referred to as the sundry accounts column.

**Debit and Credit Column:**

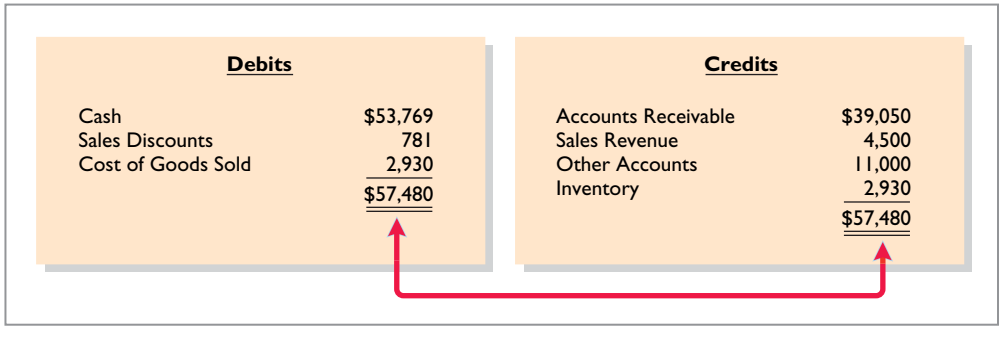
6. **Cost of Goods Sold and Inventory.** This column records debits to Cost of Goods Sold and credits to Inventory.

In a multi-column journal, generally only one line is needed for each entry. Debit and credit amounts for each line must be equal. When Karns journalizes the collection from Abbot Sisters on May 10, for example, three amounts are indicated. Note also that the Account Credited column identifies both general ledger and subsidiary ledger account titles. General ledger accounts are illustrated in the May 1 and May 22 entries. A subsidiary account is illustrated in the May 10 entry for the collection from Abbot Sisters.

When Karns has finished journalizing a multi-column journal, it totals the amount columns and compares the totals to prove the equality of debits and credits. **Illustration 7.10** shows the proof of the equality of Karns's cash receipts journal.

**ILLUSTRATION 7.10**

**Proving the equality of the cash receipts journal**




Totaling the columns of a journal and proving the equality of the totals is called **footing** and **cross-footing** a journal.

## Posting the Cash Receipts Journal

Posting a multi-column journal (Illustration 7.9) involves the following steps.

1. **At the end of the month**, the company posts all column totals, except for the Other Accounts total, to the account title(s) specified in the column heading (such as Cash or Accounts Receivable). The company then enters account numbers below the column totals to show that they have been posted. For example, Karns has posted Cash to account No. 101, Accounts Receivable to account No. 112, Inventory to account No. 120, Sales Revenue to account No. 401, Sales Discounts to account No. 414, and Cost of Goods Sold to account No. 505.
2. The company **separately posts the individual amounts comprising the Other Accounts total** to the general ledger accounts specified in the Account Credited column. See, for

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example, the credit posting to Owner's Capital. The total amount of this column has not been posted. The symbol (X) is inserted below the total to this column to indicate that the amount has not been posted.

3. The individual amounts in a column, posted in total to a control account (Accounts Receivable, in this case), are posted **daily to the subsidiary ledger** account specified in the Account Credited column. See, for example, the credit posting of $10,600 to Abbot Sisters.

The symbol **CR**, used in both the subsidiary and general ledgers, identifies postings from the cash receipts journal.

### Proving the Ledgers

After posting of the cash receipts journal is completed, Karns proves the ledgers. As shown in Illustration 7.11, the general ledger totals agree. Also, the sum of the subsidiary ledger balances equals the control account balance.

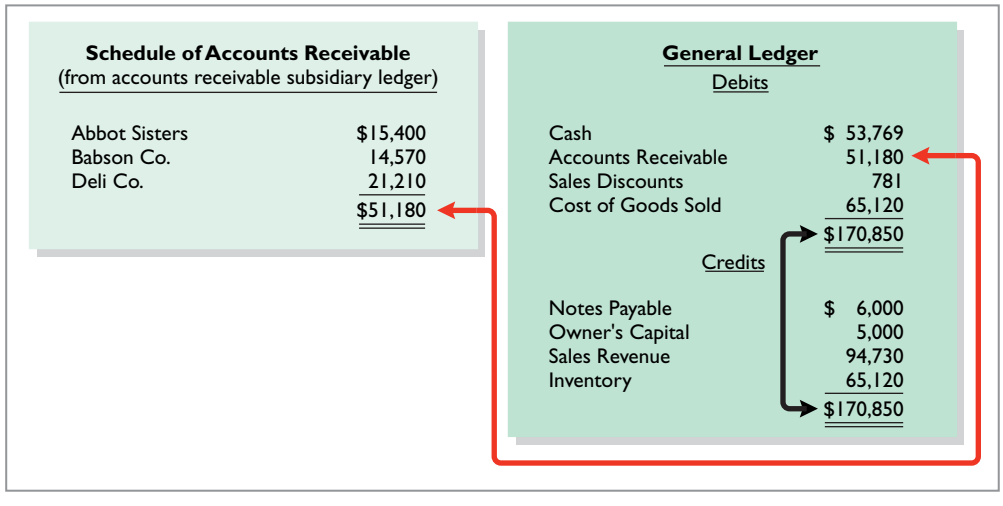


**ILLUSTRATION 7.11**
**Proving the ledgers after posting the sales and the cash receipts journals**

## Purchases Journal

In the **purchases journal**, companies record all purchases of merchandise on account. Each entry in this journal results in a debit to Inventory and a credit to Accounts Payable (see Helpful Hint). For example, consider the following credit purchase transactions for Karns Wholesale Supply in Illustration 7.12.

**HELPFUL HINT**
A single-column purchases journal needs only to be footed to prove the equality of debits and credits.

**ILLUSTRATION 7.12**
**Credit purchase transactions**

| Date | Supplier | Amount |
|---|---|---|
| 5/6 | Jasper Manufacturing Inc. | $11,000 |
| 5/10 | Eaton and Howe Inc. | 7,200 |
| 5/14 | Fabor and Son | 6,900 |
| 5/19 | Jasper Manufacturing Inc. | 17,500 |
| 5/26 | Fabor and Son | 8,700 |
| 5/29 | Eaton and Howe Inc. | 12,600 |

Illustration 7.13 shows the purchases journal for Karns Wholesale Supply. When using a one-column purchases journal (as in Illustration 7.13), a company cannot journalize other types of purchases on account or cash purchases in it. For example, if the company used the purchases journal in Illustration 7.13, Karns would have to record credit purchases of equipment or supplies in the general journal. Likewise, all cash purchases would be entered in the cash payments journal.

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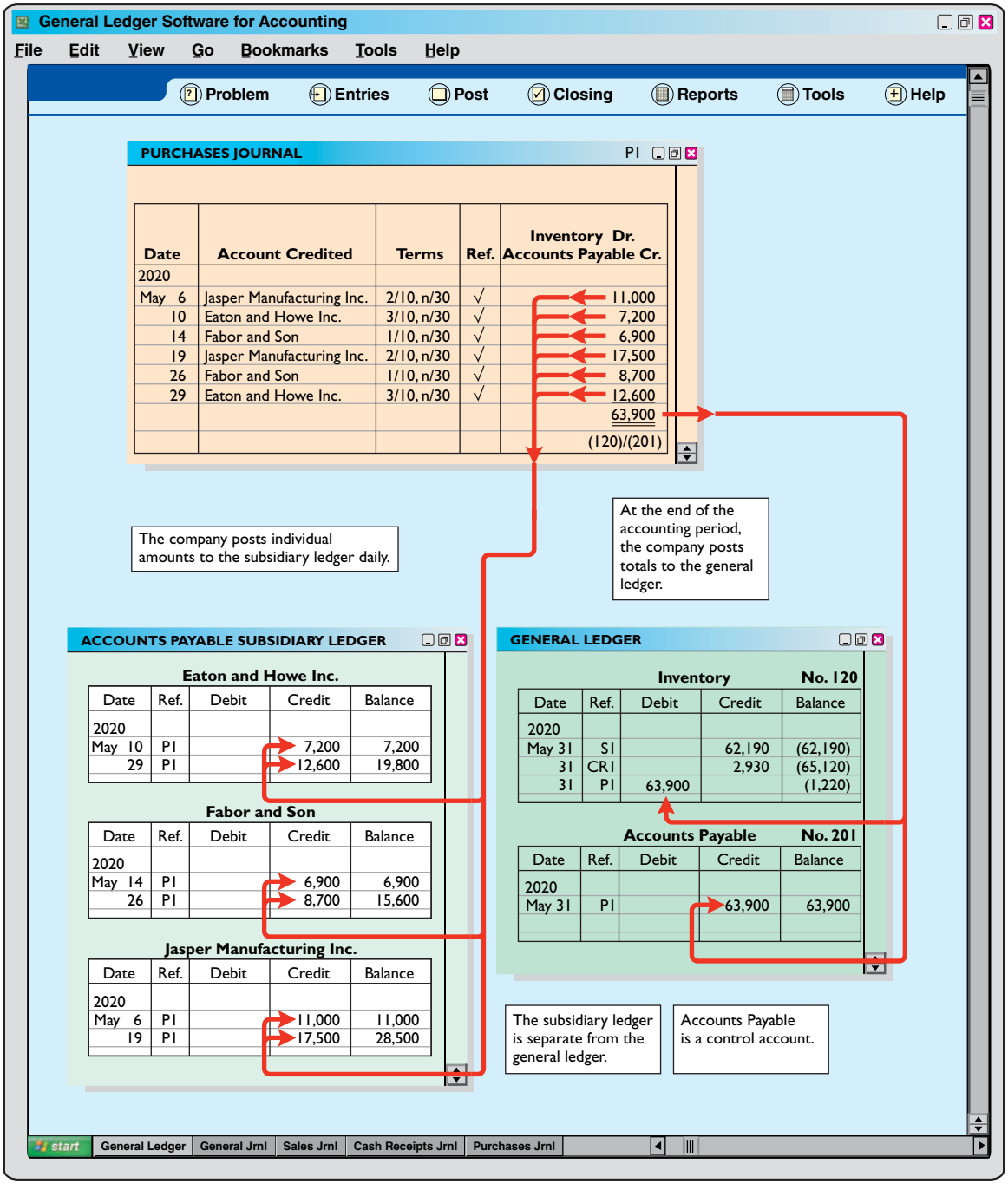
**ILLUSTRATION 7.13** Journalizing and posting the purchases journal


General Ledger Software for Accounting
File Edit View Go Bookmarks Tools Help
Problem Entries Post Closing Reports Tools Help
PURCHASES JOURNAL P1
Date | Account Credited | Terms | Ref. | Inventory Dr. Accounts Payable Cr.
2020
May 6 | Jasper Manufacturing Inc. | 2/10, n/30 | √ | 11,000
10 | Eaton and Howe Inc. | 3/10, n/30 | √ | 7,200
14 | Fabor and Son | 1/10, n/30 | √ | 6,900
19 | Jasper Manufacturing Inc. | 2/10, n/30 | √ | 17,500
26 | Fabor and Son | 1/10, n/30 | √ | 8,700
29 | Eaton and Howe Inc. | 3/10, n/30 | √ | 12,600
63,900
(120)/(201)
The company posts individual amounts to the subsidiary ledger daily.
At the end of the accounting period, the company posts totals to the general ledger.
ACCOUNTS PAYABLE SUBSIDIARY LEDGER
Eaton and Howe Inc.
Date | Ref. | Debit | Credit | Balance
2020
May 10 | P1 | 7,200 | 7,200
29 | P1 | 12,600 | 19,800
Fabor and Son
Date | Ref. | Debit | Credit | Balance
2020
May 14 | P1 | 6,900 | 6,900
26 | P1 | 8,700 | 15,600
Jasper Manufacturing Inc.
Date | Ref. | Debit | Credit | Balance
2020
May 6 | P1 | 11,000 | 11,000
19 | P1 | 17,500 | 28,500
GENERAL LEDGER
Inventory No. 120
Date | Ref. | Debit | Credit | Balance
2020
May 31 | S1 | 62,190 | (62,190)
31 | CR1 | 2,930 | (65,120)
31 | P1 | 63,900 | (1,220)
Accounts Payable No. 201
Date | Ref. | Debit | Credit | Balance
2020
May 31 | P1 | 63,900 | 63,900
The subsidiary ledger is separate from the general ledger.
Accounts Payable is a control account.
start
General Ledger
General Jrnl
Sales Jrnl
Cash Receipts Jrnl
Purchases Jrnl

## Journalizing Credit Purchases of Merchandise

The journalizing procedure is similar to that for a sales journal. Companies make entries in the purchases journal from purchase invoices. In contrast to the sales journal, the purchases journal may not have an invoice number column because invoices received from different suppliers will not be in numerical sequence. To ensure that they record all purchase invoices, some companies consecutively number each invoice upon receipt and then use an internal document number column in the purchases journal. The entries for Karns Wholesale Supply are based on the assumed credit purchases listed in Illustration 7.12.

**HELPFUL HINT**

**Postings to subsidiary ledger accounts are done daily because it is often necessary to know a current balance for the subsidiary accounts.**

## Posting the Purchases Journal

The procedures for posting the purchases journal are similar to those for the sales journal. In this case, Karns makes **daily** postings to the **accounts payable ledger** (see Helpful Hint).

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It makes **monthly** postings to Inventory and Accounts Payable in the general ledger. In both ledgers, Karns uses **P1** in the reference column to show that the postings are from page 1 of the purchases journal.

Proof of the equality of the postings from the purchases journal to both ledgers is shown in Illustration 7.14.

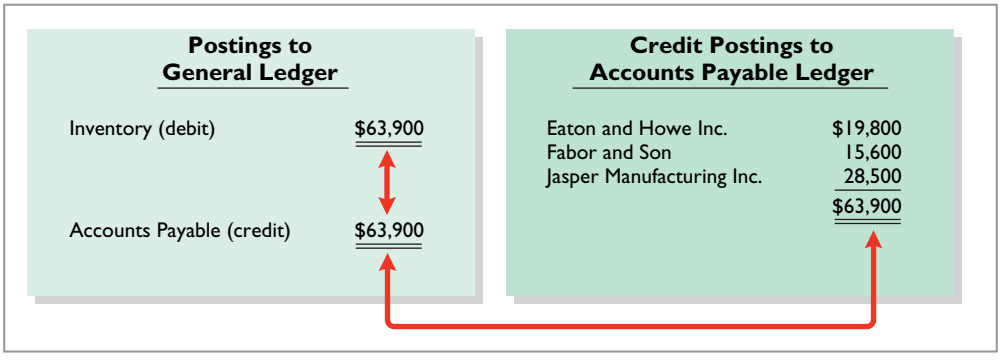
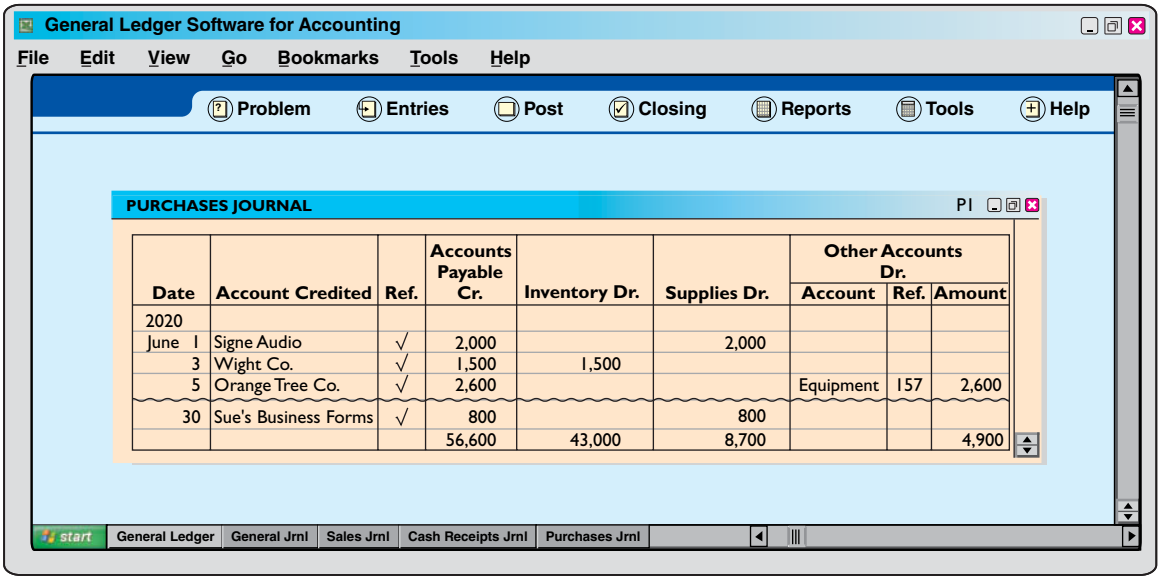



**ILLUSTRATION 7.14** **Proving the equality of the purchases journal**

## Expanding the Purchases Journal

Some companies expand the purchases journal to include all types of purchases on account, not just merchandise. Instead of one column for inventory and accounts payable, they use a multiple-column format. This format usually includes a credit column for Accounts Payable and debit columns for purchases of Inventory, Supplies, and Other Accounts. Illustration 7.15 shows a multi-column purchases journal for Hanover Co. The posting procedures are similar to those shown earlier for posting the cash receipts journal. *For homework problems, assume the use of a single-column purchases journal unless instructed otherwise.*

**ILLUSTRATION 7.15** **Multi-column purchases journal**


General Ledger Software for Accounting
File Edit View Go Bookmarks Tools Help
Problem Entries Post Closing Reports Tools Help
PURCHASES JOURNAL P1
start General Ledger General Jrnl Sales Jrnl Cash Receipts Jrnl Purchases Jrnl

| Date | Account Credited | Ref. | Accounts Payable Cr. | Inventory Dr. | Supplies Dr. | Other Accounts Dr. Account | Ref. | Amount |
|---|---|---|---|---|---|---|---|---|
| 2020 | | | | | | | | |
| June 1 | Signe Audio | √ | 2,000 | | 2,000 | | | |
| 3 | Wight Co. | √ | 1,500 | 1,500 | | | | |
| 5 | Orange Tree Co. | √ | 2,600 | | | Equipment | 157 | 2,600 |
| 30 | Sue's Business Forms | √ | 800 | | 800 | | | |
| | | | 56,600 | 43,000 | 8,700 | | | 4,900 |

# Cash Payments Journal

In a **cash payments (cash disbursements) journal**, companies record all disbursements of cash. Entries are made from prenumbered checks. Because companies make cash payments for various purposes, the cash payments journal has multiple columns. Illustration 7.16 shows a four-column journal.

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**ILLUSTRATION 7.16** **Journalizing and posting the cash payments journal**

General Ledger Software for Accounting

File Edit View Go Bookmarks Tools Help

Problem Entries Post Closing Reports Tools Help

**CASH PAYMENTS JOURNAL** CP1

| Date | Ck. No. | Account Debited | Ref. | Other Accounts Dr. | Accounts Payable Dr. | Inventory Cr. | Cash Cr. |
|---|---|---|---|---|---|---|---|
| 2020 | | | | | | | |
| May 1 | 101 | Prepaid Insurance | 130 | 1,200 | | | 1,200 |
| 3 | 102 | Inventory | 120 | 100 | | | 100 |
| 8 | 103 | Inventory | 120 | 4,400 | | | 4,400 |
| 10 | 104 | Jasper Manuf. Inc. | √ | | 11,000 | 220 | 10,780 |
| 19 | 105 | Eaton & Howe Inc. | √ | | 7,200 | 216 | 6,984 |
| 23 | 106 | Fabor and Son | √ | | 6,900 | 69 | 6,831 |
| 28 | 107 | Jasper Manuf. Inc. | √ | | 17,500 | 350 | 17,150 |
| 30 | 108 | Owner's Drawings | 306 | 500 | | | 500 |
| | | | | 6,200 | 42,600 | 855 | 47,945 |
| | | | | (x) | (201) | (120) | (101) |

The company posts individual amounts to the subsidiary ledger daily.

At the end of the accounting period, the company posts totals to the general ledger.

**ACCOUNTS PAYABLE SUBSIDIARY LEDGER**

**Eaton and Howe Inc.**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 10 | PI | | 7,200 | 7,200 |
| 19 | CPI | 7,200 | | ------- |
| 29 | PI | | 12,600 | 12,600 |

**Fabor and Son**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 14 | PI | | 6,900 | 6,900 |
| 23 | CPI | 6,900 | | ------- |
| 26 | PI | | 8,700 | 8,700 |

**Jasper Manufacturing Inc.**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 6 | PI | | 11,000 | 11,000 |
| 10 | CPI | 11,000 | | -------- |
| 19 | PI | | 17,500 | 17,500 |
| 28 | CPI | 17,500 | | -------- |

The subsidiary ledger is separate from the general ledger.

Accounts Payable is a control account.

**GENERAL LEDGER**

**Cash** No. 101

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 31 | CR1 | 53,769 | | 53,769 |
| 31 | CP1 | | 47,945 | 5,824 |

**Inventory** No. 120

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 3 | CPI | 100 | | 100 |
| 8 | CPI | 4,400 | | 4,500 |
| 31 | SI | | 62,190 | 57,690 |
| 31 | CRI | | 2,930 | 60,620 |
| 31 | PI | 63,900 | | 3,280 |
| 31 | CPI | | 855 | 2,425 |

**Prepaid Insurance** No. 130

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 1 | CP1 | 1,200 | | 1,200 |

**Accounts Payable** No. 201

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 31 | PI | | 63,900 | 63,900 |
| 31 | CP1 | 42,600 | | 21,300 |

**Owner's Drawings** No. 306

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| May 30 | CP1 | 500 | | 500 |

start | General Ledger | General Jrnl | Sales Jrnl | Cash Receipts Jrnl | Purchases Jrnl

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## Journalizing Cash Payments Transactions

The procedures for journalizing transactions in this journal are similar to those for the cash receipts journal. Karns records each transaction on one line, and for each line there must be equal debit and credit amounts. The entries in the cash payments journal in Illustration 7.16 are based on the following transactions for Karns Wholesale Supply.

May 1 Issued check No. 101 for $1,200 for the annual premium on a fire insurance policy.
3 Issued check No. 102 for $100 in payment of freight when terms were FOB shipping point.
8 Issued check No. 103 for $4,400 for the purchase of merchandise.
10 Sent check No. 104 for $10,780 to Jasper Manufacturing Inc. in payment of May 6 invoice for $11,000 less a 2% discount.
19 Mailed check No. 105 for $6,984 to Eaton and Howe Inc. in payment of May 10 invoice for $7,200 less a 3% discount.
23 Sent check No. 106 for $6,831 to Fabor and Son in payment of May 14 invoice for $6,900 less a 1% discount.
28 Sent check No. 107 for $17,150 to Jasper Manufacturing Inc. in payment of May 19 invoice for $17,500 less a 2% discount.
30 Issued check No. 108 for $500 to D. A. Karns as a cash withdrawal for personal use.

Note that whenever Karns enters an amount in the Other Accounts column, it must identify a specific general ledger account in the Account Debited column. The entries for checks No. 101, 102, 103, and 108 illustrate this situation. Similarly, Karns must identify a subsidiary account in the Account Debited column whenever it enters an amount in the Accounts Payable column. See, for example, the entry for check No. 104.

After Karns journalizes the cash payments journal, it totals the columns. The totals are then balanced to prove the equality of debits and credits.

## Posting the Cash Payments Journal

The procedures for posting the cash payments journal are similar to those for the cash receipts journal. Karns posts the amounts recorded in the Accounts Payable column individually to the subsidiary ledger and in total to the control account. It posts Inventory and Cash only in total at the end of the month. Transactions in the Other Accounts column are posted individually to the appropriate account(s) affected. The company does not post totals for the Other Accounts column.

Illustration 7.16 shows the posting of the cash payments journal. Note that Karns uses the symbol **CP** as the posting reference. After postings are completed, the company proves the equality of the debit and credit balances in the general ledger. In addition, the control account balances should agree with the subsidiary ledger total balance. **Illustration 7.17** shows the agreement of these balances.

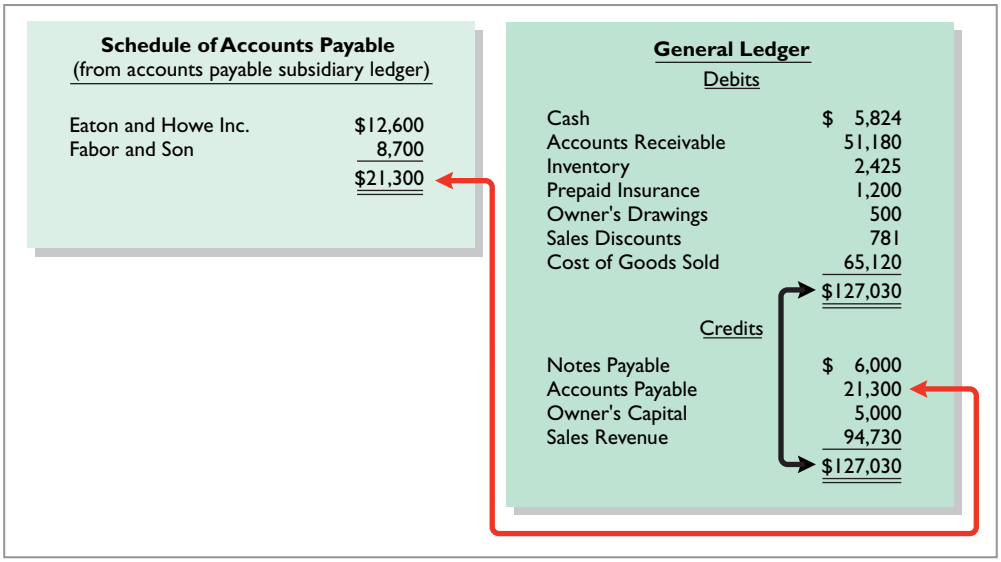


**ILLUSTRATION 7.17**

**Proving the ledgers after postings from the sales, cash receipts, purchases, and cash payments journals**

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## Effects of Special Journals on the General Journal

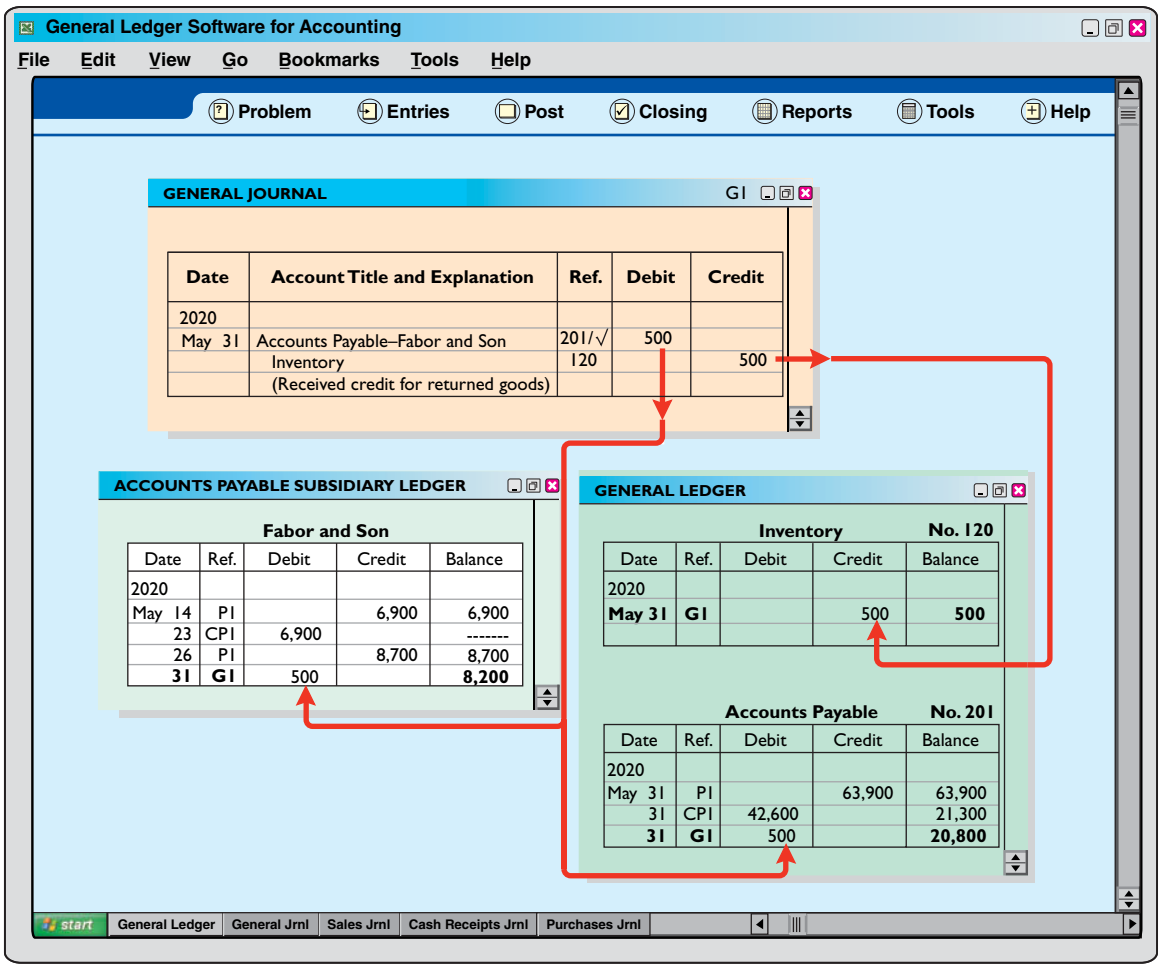
Special journals for sales, purchases, and cash substantially reduce the number of entries that companies make in the general journal. **Only transactions that cannot be entered in a special journal are recorded in the general journal.** For example, a company may use the general journal to record such transactions as granting of credit to a customer for a sales return or allowance, granting of credit from a supplier for purchases returned, acceptance of a note receivable from a customer, and purchase of equipment by issuing a note payable. Also, **correcting, adjusting, and closing entries are made in the general journal**.

The general journal has columns for date, account title and explanation, reference, and debit and credit amounts. When control and subsidiary accounts are not involved, the procedures for journalizing and posting of transactions are the same as those described in earlier chapters. When control and subsidiary accounts are involved, companies make two changes from the earlier procedures:

1. In **journalizing**, they identify both the control and the subsidiary accounts.
2. In **posting**, there must be a **dual posting**: once to the control account and once to the subsidiary account.

To illustrate, assume that on May 31, Karns Wholesale Supply returns $500 of merchandise for credit to Fabor and Son. Illustration 7.18 shows the entry in the general journal and the posting of the entry.

**ILLUSTRATION 7.18** **Journalizing and posting the general journal**


General Ledger Software for Accounting
File Edit View Go Bookmarks Tools Help
Problem Entries Post Closing Reports Tools Help
GENERAL JOURNAL G1
Date | Account Title and Explanation | Ref. | Debit | Credit
2020
May 31 | Accounts Payable–Fabor and Son | 201/√ | 500 |
Inventory | 120 | | 500
(Received credit for returned goods)
ACCOUNTS PAYABLE SUBSIDIARY LEDGER
Fabor and Son
Date | Ref. | Debit | Credit | Balance
2020
May 14 | P1 | | 6,900 | 6,900
23 | CP1 | 6,900 | | -------
26 | P1 | | 8,700 | 8,700
31 | G1 | 500 | | 8,200
GENERAL LEDGER
Inventory No. 120
Date | Ref. | Debit | Credit | Balance
2020
May 31 | G1 | | 500 | 500
Accounts Payable No. 201
Date | Ref. | Debit | Credit | Balance
2020
May 31 | P1 | | 63,900 | 63,900
31 | CP1 | 42,600 | | 21,300
31 | G1 | 500 | | 20,800
start General Ledger General Jrnl Sales Jrnl Cash Receipts Jrnl Purchases Jrnl

Note that the general journal indicates two accounts (Accounts Payable, and Fabor and Son) for the debit, and two postings ("201/✓") in the reference column. One debit is posted to the control account and another debit is posted to the creditor's account in the subsidiary

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ledger. If Karns receives cash instead of credit on this return, then it would record the transaction in the cash receipts journal.

## Cyber Security: A Final Comment

Have you ever been hacked? With the increasing use of cell phones, tablets, and other social media outlets, a real risk exists that your confidential information may be stolen and used illegally. Companies, individuals, and even nations have all been victims of **cybercrime**—a crime that involves the Internet, a computer system, or computer technology.

For companies, cybercrime is clearly a major threat as the hacking of employees' or customers' records related to cybercrime can cost millions of dollars. Unfortunately, the numbers of security breaches are increasing. A security breach at **Target**, for example, cost the company a minimum of $20 million, the CEO lost his job, and sales plummeted.

Here are three reasons for the rise in the successful hacks of corporate computer records.

1. Companies and their employees continue to increase their activity on the Internet, primarily due to the use of mobile devices and cloud computing.
2. Companies today collect and store unprecedented amounts of personal data on customers and employees.
3. Companies often take measures to protect themselves from cyber security attacks but then fail to check if employees are carrying out the proper security guidelines.

Note that cyber security risks extend far beyond company operations and compliance. Many hackers target highly sensitive intellectual information or other strategic assets. **Illustration 7.19** highlights the type of hackers and their motives, targets and impacts.

**ILLUSTRATION 7.19** **Profiles of hackers**

| Malicious Actors | Motives | Targets | Impacts |
|---|---|---|---|
| **Nation-state** | • Economic, political, and/ or military advantage | • Trade secrets<br>• Sensitive business information<br>• Emerging technologies<br>• Critical infrastructure | • Loss of competitive advantage<br>• Disruption to critical infrastructure |
| **Organized crime** | • Immediate financial gain<br>• Collect information for future financial gains | • Financial/payment systems<br>• Personally identifiable information<br>• Payment card information<br>• Protected health information | • Costly regulatory inquiries and penalties<br>• Consumer and shareholder lawsuits<br>• Loss of consumer confidence |
| **Hacktivists** | • Influence political and/or social change<br>• Pressure businesses to change their practices | • Corporate secrets<br>• Sensitive business information<br>• Information related to key executives, employees, customers, and business partners | • Disruption of business activities<br>• Harm to brand and reputation<br>• Loss of consumer confidence |
| **Insiders** | • Personal advantage, monetary gain<br>• Professional revenge<br>• Patriotism | • Sales, deals, market strategies<br>• Corporate secrets, intellectual property<br>• Business operations<br>• Personnel information | • Trade secret disclosure<br>• Operational disruption<br>• Harm to brand and reputation<br>• National security impact |

*Source:* PriceWaterhouseCoopers, "Answering Your Cybersecurity Questions" (January 2014).

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Companies now recognize that cyber security systems that protect confidential data must be implemented. It follows that companies (and nations and individuals) must continually verify that their cyber security defenses are sound and uncompromised.

### DO IT! 3 | Special Journals

Swisher Company had the following transactions during March.

1. Collected cash on account from Oakland Company.
2. Purchased equipment by signing a note payable.
3. Sold merchandise on account.
4. Purchased merchandise on account.
5. Paid $2,400 for a 2-year insurance policy.

Identify the journal in which each of the transactions above is recorded. The company uses the special journals described in the chapter plus a general journal.

**ACTION PLAN**

- Determine if the transaction involves the receipt of cash (cash receipts journal) or the payment of cash (cash payments journal).
- Determine if the transaction is a sale of merchandise on account (sales journal) or a purchase of merchandise on account (purchases journal).
- All other transactions are recorded in the general journal.

**Solution**

| | |
|---|---|
| 1. Collected cash on account from Oakland Company. | Cash receipts journal |
| 2. Purchased equipment by signing a note payable. | General journal |
| 3. Sold merchandise on account. | Sales journal |
| 4. Purchased merchandise on account. | Purchases journal |
| 5. Paid $2,400 for a 2-year insurance policy. | Cash payments journal |

Related exercise material: **BE7.6, BE7.7, BE7.8, BE7.9, BE7.10, DO IT! 7.3, E7.6, E7.7, E7.8, and E7.10.**

# Review and Practice

## Learning Objectives Review

**1 Explain the basic concepts of an accounting information system.**

The basic principles in developing an accounting information system are cost-effectiveness, useful output, and flexibility. Most companies use a computerized accounting system. Smaller companies use entry-level software such as QuickBooks® or Sage 50. Larger companies use custom-made software packages, which often integrate all aspects of the organization.

**2 Describe the nature and purpose of a subsidiary ledger.**

A subsidiary ledger is a group of accounts with a common characteristic. It facilitates the recording process by freeing the general ledger from details of individual balances.

**3 Record transactions in special journals.**

Companies use special journals to group similar types of transactions. In a special journal, generally only one line is used to record a complete transaction.

## Glossary Review

**Accounting information system** A system that collects and processes transaction data and communicates financial information to decision-makers. (p. 7-2).

**Accounts payable (creditors') subsidiary ledger** A subsidiary ledger that collects transaction data of individual creditors. (p. 7-6).

**Accounts receivable (customers') subsidiary ledger** A subsidiary ledger that collects transaction data of individual customers. (p. 7-6).

**Cash payments (cash disbursements) journal** A special journal that records all disbursements of cash. (p. 7-17).

**Cash receipts journal** A special journal that records all cash received. (p. 7-11).

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**Control account** An account in the general ledger that summarizes subsidiary ledger data. (p. 7-6).

**Cybercrime** A crime that involves the Internet, a computer system, or computer technology. (p. 7-21).

**Manual accounting system** A system in which someone performs each of the steps in the accounting cycle by hand. (p. 7-5).

**Purchases journal** A special journal that records all purchases of merchandise on account. (p. 7-15).

**Sales journal** A special journal that records all sales of merchandise on account. (p. 7-9).

**Special journals** Journals that record similar types of transactions, such as all credit sales. (p. 7-8).

**Subsidiary ledger** A group of accounts with a common characteristic. (p. 7-5).

## Practice Multiple-Choice Questions

**1. (LO 1)** The basic principles of an accounting information system include all of the following **except**:

**a.** cost-effectiveness. **c.** useful output.
**b.** flexibility. **d.** periodicity.

**2. (LO 1)** Which of the following is **not** an advantage of computerized accounting systems?

**a.** Data is entered only once in computerized accounting systems.
**b.** Computerized accounting systems provide up-to-date information.
**c.** Computerized accounting systems eliminate entering of transaction information.
**d.** Computerized accounting systems eliminate many errors resulting from human intervention.

**3. (LO 2)** Which of the following is **incorrect** concerning subsidiary ledgers?

**a.** The purchases ledger is a common subsidiary ledger for creditor accounts.
**b.** The accounts receivable ledger is a subsidiary ledger.
**c.** A subsidiary ledger is a group of accounts with a common characteristic.
**d.** An advantage of the subsidiary ledger is that it permits a division of labor in posting.

**4. (LO 2)** Two common subsidiary ledgers are:

**a.** accounts receivable and cash receipts.
**b.** accounts payable and cash payments.
**c.** accounts receivable and accounts payable.
**d.** sales and cost of goods sold.

**5. (LO 2)** At the beginning of the month, the accounts receivable subsidiary ledger showed balances for Apple Company $5,000 and Berry Company $7,000. During the month, credit sales were made to Apple $6,000, Berry $4,500, and Cantaloupe $8,500. Cash was collected on account from Berry $11,500 and Cantaloupe $3,000. At the end of the month, the control account Accounts Receivable in the general ledger should have a balance of:

**a.** $11,000. **c.** $16,500.
**b.** $12,000. **d.** $31,000.

**6. (LO 3)** A sales journal will be used for:

| | Credit Sales | Cash Sales | Sales Discounts |
|---|---|---|---|
| **a.** | no | yes | yes |
| **b.** | yes | no | yes |
| **c.** | yes | no | no |
| **d.** | yes | yes | no |

**7. (LO 3)** A purchase of equipment on account is recorded in the:

**a.** cash receipts journal. **c.** cash payments journal.
**b.** purchases journal. **d.** general journal.

**8. (LO 3)** A purchase of equipment using cash is recorded in the:

**a.** cash receipts journal. **c.** cash payments journal.
**b.** purchases journal. **d.** general journal.

**9. (LO 3)** Which of the following statements is **correct**?

**a.** The sales discount column is included in the cash receipts journal.
**b.** The purchases journal records all purchases of merchandise whether for cash or on account.
**c.** The cash receipts journal records sales on account.
**d.** Merchandise returned by the buyer is recorded by the seller in the purchases journal.

**10. (LO 3)** Dotel Company's cash receipts journal includes an Accounts Receivable column and an Other Accounts column. At the end of the month, these columns are posted to the general ledger as:

| | Accounts Receivable | Other Accounts |
|---|---|---|
| **a.** | a column total | a column total |
| **b.** | individual amounts | a column total |
| **c.** | individual amounts | individual amounts |
| **d.** | a column total | individual amounts |

**11. (LO 3)** Which of the following is **incorrect** concerning the posting of the cash receipts journal?

**a.** The total of the Other Accounts column is not posted.
**b.** All column totals except the total for the Other Accounts column are posted once at the end of the month to the account title(s) specified in the column heading.
**c.** The totals of all columns are posted daily to the accounts specified in the column heading.
**d.** The individual amounts in a column posted in total to a control account are posted daily to the subsidiary ledger account specified in the Account Credited column.

**12. (LO 3)** Postings from the purchases journal to the subsidiary ledger are generally made:

**a.** yearly. **c.** weekly.
**b.** monthly. **d.** daily.

**13. (LO 3)** Which statement is **incorrect** regarding the general journal?

**a.** Only transactions that cannot be entered in a special journal are recorded in the general journal.

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**b.** Dual postings are always required in the general journal.

**c.** The general journal may be used to record acceptance of a note receivable in payment of an account receivable.

**d.** Correcting, adjusting, and closing entries are made in the general journal.

**14.** **(LO 3)** When companies use special journals:

**a.** they record all purchase transactions in the purchases journal.

**b.** they record all cash received, except from cash sales, in the cash receipts journal.

**c.** they record all cash disbursements in the cash payments journal.

**d.** a general journal is not necessary.

**15.** **(LO 3)** If a customer returns goods for credit, the selling company normally makes an entry in the:

**a.** cash payments journal. **c.** general journal.

**b.** sales journal. **d.** cash receipts journal.

### Solutions

**1. d.** Periodicity is not one of the basic principles of accounting information systems. The other choices are true statements.

**2. c.** Computerized accounting systems do not eliminate the entering of transaction information. The other choices are advantages of computerized accounting systems.

**3. a.** The accounts payable ledger, not the purchases ledger, is a common subsidiary ledger for creditor accounts. The other choices are true statements.

**4. c.** Accounts receivable and accounts payable are two common subsidiary ledgers. The other choices are incorrect because (a) cash receipts, (b) cash payments, and (d) sales revenue and cost of goods sold are not subsidiary ledgers.

**5. c.** The accounts receivable subsidiary ledger balances are the following: Apple Company $11,000 (beginning balance $5,000 + credit sales $6,000), Berry Company $0 (beginning balance $7,000 + credit sales $4,500 − cash collected on account $11,500), and Cantaloupe $5,500 (credit sales $8,500 − cash collected on account $3,000). The Accounts Receivable control account in the general ledger therefore has a balance of $16,500 ($11,000 + $0 + $5,500), not (a) $11,000, (b) $12,000, or (d) $31,000.

**6. c.** The sales journal is used for credit sales. The cash receipts journal is used for cash sales and sales discounts. Therefore, choices (a), (b), and (d) are incorrect.

**7. d.** Unless the company uses a multi-column purchases journal, the general journal is used to record the purchase of equipment **on account**. The other choices are incorrect because (a) the cash receipts journal would be used only if cash is received, (b) a one-column purchases journal cannot be used to record a purchase of equipment on account, and (c) the cash payments journal would be used only if this is a cash purchase.

**8. c.** The cash payments journal includes all cash paid, including all **cash** purchases. The other choices are incorrect because (a) the cash receipts journal includes all cash received, including cash sales, not cash purchases; (b) the purchases journal includes only purchases of inventory on account, not cash purchases; and (d) the general journal is only used if a transaction cannot be entered in a special journal. In this case, this transaction can be entered into the cash payments journal.

**9. a.** The sales discount column is included in the cash receipts journal. The other choices are incorrect because (b) the purchases journal only records purchases of inventory on account, not for cash; (c) the sales journal, not the cash receipts journal, records sales on account; and (d) when merchandise is returned by a buyer, the seller records this sales return in the general journal.

**10. d.** The Accounts Receivable column would be posted to the general ledger as a column total, and the Other Accounts column would be posted as individual amounts. Therefore, the other choices are incorrect.

**11. c.** The totals of all columns are not posted daily to the accounts specified in the column heading. Instead, all column totals except the total for the Other Accounts column (which is never posted) are posted once at the end of the month to the account title(s) specified in the column heading. The other choices are true statements.

**12. d.** Postings from the purchases journal to the subsidiary ledger are usually made daily, not (a) yearly, (b) monthly, or (c) weekly.

**13. b.** Dual postings are not always required in the general journal. Only when control and subsidiary accounts are involved are companies required to dual post: once to the control account and once to the subsidiary account. The other choices are true statements.

**14. c.** When special journals are used, companies record all cash disbursements in the cash payments journal. The other choices are incorrect because when special journals are used, (a) companies record only purchases of inventory on account in the purchases journal; (b) companies record all cash receipts, including cash sales, in the cash receipts journal; and (d) a general journal is still needed.

**15. c.** When a customer returns goods for **credit** (i.e., no cash is involved), the selling company records the transaction in the general journal, not the (a) cash payments journal, (b) sales journal, or (d) cash receipts journal.

## Practice Brief Exercises

*Identify subsidiary ledger balances.*

**1.** **(LO 2)** The following information is related to Garcia Company for its first month of operations. Identify the balances that appear in the accounts receivable subsidiary ledger and the accounts receivable balance that appears in the general ledger at the end of January.

| Credit Sales | | | Cash Collections | | |
|---|---|---|---|---|---|
| Jan. 7 | Rodan Co. | $11,000 | Jan. 17 | Rodan Co. | $6,000 |
| 15 | Lawry Co. | 7,000 | 24 | Lawry Co. | 5,000 |
| 23 | Anderson Co. | 10,000 | 29 | Anderson Co. | 8,000 |

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## Solution

**1.**

**Accounts Receivable Subsidiary Ledger**

**Rodan Co.**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| Jan. 7 | | 11,000 | | 11,000 |
| 17 | | | 6,000 | 5,000 |

**Lawry Co.**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| Jan. 15 | | 7,000 | | 7,000 |
| 24 | | | 5,000 | 2,000 |

**Anderson Co.**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| Jan. 23 | | 10,000 | | 10,000 |
| 29 | | | 8,000 | 2,000 |

**General Ledger**

**Accounts Receivable**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| Jan. 31 | | 28,000 | | 28,000 |
| 31 | | | 19,000 | 9,000 |

**2. (LO 2)** Presented below is information related to Garcia Company for its first month of operations. Identify the balances that appear in the accounts payable subsidiary ledger and the accounts payable balance that appears in the general ledger at the end of January.

*Identify subsidiary ledger balances.*

| Credit Purchases | | | Cash Payments | | |
|---|---|---|---|---|---|
| Jan. 4 | Jones Co. | $22,000 | Jan. 13 | Jones Co. | $13,000 |
| 12 | Holland Co. | 14,000 | 20 | Holland Co. | 11,000 |
| 19 | Geovany Co. | 20,000 | 25 | Geovany Co. | 17,000 |

## Solution

**2.**

**Accounts Payable Subsidiary Ledger**

**Jones Co.**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| Jan. 4 | | | 22,000 | 22,000 |
| 13 | | 13,000 | | 9,000 |

**Holland Co.**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| Jan. 12 | | | 14,000 | 14,000 |
| 20 | | 11,000 | | 3,000 |

**Geovany Co.**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| Jan. 19 | | | 20,000 | 20,000 |
| 25 | | 17,000 | | 3,000 |

**General Ledger**

**Accounts Payable**

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| Jan. 31 | | | 56,000 | 56,000 |
| 31 | | 41,000 | | 15,000 |

**3. (LO 3)** Soto Company has the following selected transactions during March.

*Journalize transactions in general journal.*

Mar. 2 Purchased equipment costing $9,400 from Jennings Company on account.
5 Received credit of $630 from May Company for merchandise damaged in shipment to Soto.
7 Issued credit of $500 to Morneau Company for merchandise the customer returned. The returned merchandise had a cost of $300.

Soto Company uses a one-column purchases journal, a sales journal, the columnar cash journals used in the text, and a general journal. Journalize the transactions in the general journal.

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### Solution

**3.**

| | | | |
|---|---|---|---|
| Mar. 2 | Equipment | 9,400 | |
| | Accounts Payable | | 9,400 |
| 5 | Accounts Payable | 630 | |
| | Inventory | | 630 |
| 7 | Sales Returns and Allowances | 500 | |
| | Accounts Receivable | | 500 |
| | Inventory | 300 | |
| | Cost of Goods Sold | | 300 |

## Practice Exercises

*Post various journals to control and subsidiary accounts.*

**1. (LO 2, 3)** On June 1, the balance of the Accounts Receivable control account in the general ledger of Rath Company was $13,620. The customers' subsidiary ledger contained account balances as follows: Wilson $2,000, Sanchez $3,140, Roberts $2,560, and Marks $5,920. At the end of June, the various journals contained the following information.

**Sales journal:** Sales to Roberts $900, to Wilson $1,400, to Hardy $1,500, and to Marks $1,200.
**Cash receipts journal:** Cash received from Roberts $1,610, from Marks $2,600, from Hardy $580, from Sanchez $2,100, and from Wilson $1,540.
**General journal:** An allowance is granted to Marks $325.

### Instructions

**a.** Set up control and subsidiary accounts and enter the beginning balances. Do not construct the journals.

**b.** Post the various journals. Post the items as individual items or as totals, whichever would be the appropriate procedure. (No sales discounts given.)

**c.** Prepare a schedule of accounts receivable and prove the agreement of the control account with the subsidiary ledger at June 30, 2020.

### Solution

**1. a.** and **b.**

**GENERAL LEDGER**

**Accounts Receivable**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| June 1 | Balance | ✓ | | | 13,620 |
| | | S | 5,000 | | 18,620 |
| | | CR | | 8,430 | 10,190 |
| | | G | | 325 | 9,865 |

**ACCOUNTS RECEIVABLE SUBSIDIARY LEDGER**

**Hardy**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| June 1 | | | | | 0 |
| | | S | 1,500 | | 1,500 |
| | | CR | | 580 | 920 |

**Marks**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| June 1 | Balance | ✓ | | | 5,920 |
| | | S | 1,200 | | 7,120 |
| | | CR | | 2,600 | 4,520 |
| | | G | | 325 | 4,195 |

**Roberts**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| June 1 | Balance | ✓ | | | 2,560 |
| | | S | 900 | | 3,460 |
| | | CR | | 1,610 | 1,850 |

**Sanchez**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| June 1 | Balance | ✓ | | | 3,140 |
| | | CR | | 2,100 | 1,040 |

**Wilson**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| June 1 | Balance | ✓ | | | 2,000 |
| | | S | 1,400 | | 3,400 |
| | | CR | | 1,540 | 1,860 |

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**c.**

**Rath Company**
**Schedule of Accounts Receivable**
**As of June 30, 2020**

| | |
|---|---|
| Hardy | $ 920 |
| Marks | 4,195 |
| Roberts | 1,850 |
| Sanchez | 1,040 |
| Wilson | 1,860 |
| Total | $9,865 |
| Accounts Receivable | $9,865 |

**2.** **(LO 3)** Below are some typical transactions incurred by Brimmer Company.

*Indicate use of special journals.*

1. Received credit for merchandise purchased on credit.
2. Payment of employee wages.
3. Sales discount taken on goods sold.
4. Income summary closed to owner's capital.
5. Purchase of office supplies for cash.
6. Depreciation on building.
7. Purchase of merchandise on account.
8. Return of merchandise sold for credit.
9. Payment of creditors on account.
10. Collection on account from customers.
11. Sale of merchandise on account.
12. Sale of land for cash.
13. Sale of merchandise for cash.

### Instructions

For each transaction, indicate whether it would normally be recorded in a cash receipts journal, cash payments journal, sales journal, single-column purchases journal, or general journal.

### Solution

**2.**
1. General journal
2. Cash payments journal
3. Cash receipts journal
4. General journal
5. Cash payments journal
6. General journal
7. Purchases journal
8. General journal
9. Cash payments journal
10. Cash receipts journal
11. Sales journal
12. Cash receipts journal
13. Cash receipts journal

## Practice Problem

**(LO 3)** Cassandra Wilson Company uses a six-column cash receipts journal with the following columns.

*Journalize transactions in cash receipts journal and explain posting procedure.*

| | |
|---|---|
| Cash (Dr.) | Other Accounts (Cr.) |
| Sales Discounts (Dr.) | Cost of Goods Sold (Dr.) and |
| Accounts Receivable (Cr.) | Inventory (Cr.) |
| Sales Revenue (Cr.) | |

Cash receipts transactions for the month of July 2020 are as follows.

July 3 Cash sales total $5,800 (cost, $3,480).
5 Received a check for $6,370 from Jeltz Company in payment of an invoice dated June 26 for $6,500, terms 2/10, n/30.

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9 Cassandra Wilson, the proprietor, made an additional investment of $5,000 in cash in the business.
10 Cash sales total $12,519 (cost, $7,511).
12 Received a check for $7,275 from R. Eliot & Co. in payment of a $7,500 invoice dated July 3, terms 3/10, n/30.
15 Received an advance of $700 cash for future services.
20 Cash sales total $15,472 (cost, $9,283).
22 Received a check for $5,880 from Beck Company in payment of $6,000 invoice dated July 13, terms 2/10, n/30.
29 Cash sales total $17,660 (cost, $10,596).
31 Received cash of $200 for interest earned for July.

### Instructions

**a.** Journalize the transactions in the cash receipts journal.

**b.** Contrast the posting of the Accounts Receivable and Other Accounts columns.

### Solution

**a.**

**CASSANDRA WILSON COMPANY**
**Cash Receipts Journal** **CR1**

| Date | Account Credited | Ref. | Cash Dr. | Sales Discounts Dr. | Accounts Receivable Cr. | Sales Revenue Cr. | Other Accounts Cr. | Cost of Goods Sold Dr. Inventory Cr. |
|---|---|---|---|---|---|---|---|---|
| 2020 | | | | | | | | |
| 7/3 | | | 5,800 | | | 5,800 | | 3,480 |
| 5 | Jeltz Company | | 6,370 | 130 | 6,500 | | | |
| 9 | Owner's Capital | | 5,000 | | | | 5,000 | |
| 10 | | | 12,519 | | | 12,519 | | 7,511 |
| 12 | R. Eliot & Co. | | 7,275 | 225 | 7,500 | | | |
| 15 | Unearned Service Revenue | | 700 | | | | 700 | |
| 20 | | | 15,472 | | | 15,472 | | 9,283 |
| 22 | Beck Company | | 5,880 | 120 | 6,000 | | | |
| 29 | | | 17,660 | | | 17,660 | | 10,596 |
| 31 | Interest Revenue | | 200 | | | | 200 | |
| | | | 76,876 | 475 | 20,000 | 51,451 | 5,900 | 30,870 |

**b.** The Accounts Receivable column total is posted as a credit to Accounts Receivable. The individual amounts are credited to the customers' accounts identified in the Account Credited column, which are maintained in the accounts receivable subsidiary ledger. The amounts in the Other Accounts column are posted individually. They are credited to the account titles identified in the Account Credited column.

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## Questions

1. (a) What is an accounting information system? (b) "An accounting information system applies only to a manual system." Do you agree? Explain.

2. Certain principles should be followed in the development of an accounting information system. Identify and explain each of the principles.

3. What are common features of computerized accounting packages beyond recording transactions and preparing financial statements?

4. How does an enterprise resource planning (ERP) system differ from an entry-level computerized accounting system?

5. What are the advantages of using subsidiary ledgers?

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**6.** (a) When do companies normally post to (1) the subsidiary accounts and (2) the general ledger control accounts? (b) Describe the relationship between a control account and a subsidiary ledger.

**7.** Identify and explain the four special journals discussed in the chapter. List an advantage of using each of these journals rather than using only a general journal.

**8.** Kensington Company uses special journals. It recorded in a sales journal a sale made on account to R. Stiner for $435. A few days later, R. Stiner returns $70 worth of merchandise for credit. Where should Kensington Company record the sales return? Why?

**9.** A $500 purchase of merchandise on account from Lore Company was properly recorded in the purchases journal. When posted, however, the amount recorded in the subsidiary ledger was $50. How might this error be discovered?

**10.** Why would special journals used in different businesses not be identical in format? What type of business would maintain a cash receipts journal but not include a column for accounts receivable?

**11.** The cash and the accounts receivable columns in the cash receipts journal were mistakenly over-added by $4,000 at the end of the month. (a) Will the customers' ledger agree with the Accounts Receivable control account? (b) Assuming no other errors, will the trial balance totals be equal?

**12.** One column total of a special journal is posted at month-end to only two general ledger accounts. One of these two accounts is Accounts Receivable. What is the name of this special journal? What is the other general ledger account to which that same month-end total is posted?

**13.** In what journal would the following transactions be recorded? (Assume that a two-column sales journal and a single-column purchases journal are used.)

**a.** Recording of depreciation expense for the year.
**b.** Credit given to a customer for merchandise purchased on credit and returned.
**c.** Sales of merchandise for cash.
**d.** Sales of merchandise on account.
**e.** Collection of cash on account from a customer.
**f.** Purchase of office supplies on account.

**14.** In what journal would the following transactions be recorded? (Assume that a two-column sales journal and a single-column purchases journal are used.)

**a.** Cash received from signing a note payable.
**b.** Investment of cash by the owner of the business.
**c.** Closing of the expense accounts at the end of the year.
**d.** Purchase of merchandise on account.
**e.** Credit received for merchandise purchased and returned to supplier.
**f.** Payment of cash on account due a supplier.

**15.** What transactions might be included in a multiple-column purchases journal that would not be included in a single-column purchases journal?

**16.** Give an example of a transaction in the general journal that causes an entry to be posted twice (i.e., to two accounts), one in the general ledger, the other in the subsidiary ledger. Does this affect the debit/credit equality of the general ledger?

**17.** Give some examples of appropriate general journal transactions for an organization using special journals.

## Brief Exercises

**BE7.1 (LO 1)** Indicate whether each of the following statements is true or false.

*Explain basic concepts of an accounting information system.*

1. When designing an accounting system, we need to think about the needs and knowledge of both the top managers and various other users.
2. When the environment changes as a result of technological advances, increased competition, or government regulation, an accounting system does not have to be sufficiently flexible to meet the changes in order to save money.
3. In developing an accounting system, cost is relevant. The benefits obtained from the information disseminated must outweigh the cost of providing it.

**BE7.2 (LO 1)** Here is a list of words or phrases related to computerized accounting systems.

*Explain basic concepts of an accounting information system.*

1. Entry-level software.
2. Enterprise resource planning systems.
3. Network-compatible.
4. Audit trail.
5. Internal control.

### Instructions

Match each word or phrase with the best description of it.

_____ **a.** Allows multiple users to access the system at the same time.
_____ **b.** Enables the tracking of all transactions.
_____ **c.** Identifies suspicious transactions or likely mistakes such as wrong account numbers or duplicate transactions.
_____ **d.** Large-scale computer systems that integrate all aspects of the organization including accounting, sales, human resource management, and manufacturing.
_____ **e.** System for companies with revenues of less than $5 million and up to 20 employees.

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*Explain basic concepts of an accounting information system.*

**BE7.3 (LO 1)** Benji Borke has prepared the following list of statements about accounting information systems.

1. The accounting information system includes each of the steps of the accounting cycle, the documents that provide evidence of transactions that have occurred, and the accounting records.
2. The benefits obtained from information provided by the accounting information system need not outweigh the cost of providing that information.
3. Designers of accounting systems must consider the needs and knowledge of various users.
4. If an accounting information system is cost-effective and provides useful output, it does not need to be flexible.

**Instructions**

Identify each statement as true or false. If false, indicate how to correct the statement.

*Identify subsidiary ledger balances.*

**BE7.4 (LO 2)** Presented below is information related to Gantner Company for its first month of operations. Identify the balances that appear in the accounts receivable subsidiary ledger and the accounts receivable balance that appears in the general ledger at the end of January.

| Credit Sales | | | Cash Collections | | |
|---|---|---|---|---|---|
| Jan. 7 | Austin Co. | $10,000 | Jan. 17 | Austin Co. | $7,000 |
| 15 | Diaz Co. | 8,000 | 24 | Diaz Co. | 4,000 |
| 23 | Noble Co. | 9,000 | 29 | Noble Co. | 9,000 |

*Identify subsidiary ledger accounts.*

**BE7.5 (LO 2)** Identify in what ledger (general or subsidiary) each of the following accounts is shown.

**a.** Rent Expense.
**b.** Accounts Receivable—Cabrera.
**c.** Notes Payable.
**d.** Accounts Payable—Pacheco.

*Identify special journals.*

**BE7.6 (LO 3)** Identify the journal in which each of the following transactions is recorded.

**a.** Cash sales.
**b.** Owner withdrawal of cash.
**c.** Cash purchase of land.
**d.** Credit sales.
**e.** Purchase of merchandise on account.
**f.** Receipt of cash for services performed.

*Identify entries to cash receipts journal.*

**BE7.7 (LO 3)** Indicate whether each of the following debits and credits is included in the cash receipts journal. (Use "Yes" or "No" to answer this question.)

**a.** Debit to Sales Revenue.
**b.** Credit to Inventory.
**c.** Credit to Accounts Receivable.
**d.** Debit to Accounts Payable.

*Identify transactions for special journals.*

**BE7.8 (LO 3)** Villar Co. uses special journals and a general journal. Identify the journal in which each of the following transactions is recorded.

**a.** Purchased equipment on account.
**b.** Purchased merchandise on account.
**c.** Paid utility expense in cash.
**d.** Sold merchandise on account.

*Identify transactions for special journals.*

**BE7.9 (LO 3)** Identify the special journal(s) in which the following column headings appear.

**a.** Sales Discounts Dr.
**b.** Accounts Receivable Cr.
**c.** Cash Dr.
**d.** Sales Revenue Cr.
**e.** Inventory Dr.

*Indicate postings for cash receipts journal.*

**BE7.10 (LO 3)** Rauch Computer Components Inc. uses a multi-column cash receipts journal. Indicate which column(s) is/are posted only in total, only daily, or both in total and daily.

**a.** Accounts Receivable.
**b.** Sales Discounts.
**c.** Cash.
**d.** Other Accounts.

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## DO IT! Exercises

**DO IT! 7.1 (LO 1)** Indicate whether the following statements are true or false. If false, indicate how to correct the statement.

*Explain basic concepts of an accounting information system.*

1. A computerized accounting system must be customized to meet a company's needs.
2. Companies with revenues of less than $5 million and up to 20 employees generally use entry-level programs rather than ERP systems.
3. A manual accounting system provides more timely financial information than a computerized system.

**DO IT! 7.2 (LO 2)** Presented below is information related to Rizzo Company for its first month of operations. Determine the balances that appear in the accounts payable subsidiary ledger. What Accounts Payable balance appears in the general ledger at the end of January?

*Determine subsidiary and general ledger balances.*

| Credit Purchases | | | Cash Paid | | |
|---|---|---|---|---|---|
| Jan. 6 | Gorst Company | $11,000 | Jan. 11 | Gorst Company | $ 6,500 |
| Jan. 10 | Tian Company | 12,000 | Jan. 16 | Tian Company | 12,000 |
| Jan. 23 | Maddox Company | 10,000 | Jan. 29 | Maddox Company | 7,700 |

**DO IT! 7.3 (LO 3)** Hinske Company had the following transactions during April.

*Identify special journals.*

1. Sold merchandise on account.
2. Purchased merchandise on account.
3. Collected cash from a sale to Renfro Company.
4. Recorded accrued interest on a note payable.
5. Paid $2,000 for supplies.

Identify the journal in which each of the transactions above is recorded.

## Exercises

**E7.1 (LO 2, 3)** Nex Company uses both special journals and a general journal as described in this chapter. On June 30, after all monthly postings had been completed, the Accounts Receivable control account in the general ledger had a debit balance of $340,000; the Accounts Payable control account had a credit balance of $77,000.

*Determine control account balances, and explain posting of special journals.*

The July transactions recorded in the special journals are summarized below. No entries affecting accounts receivable and accounts payable were recorded in the general journal for July.

| | |
|---|---|
| Sales journal | Total sales $161,400 |
| Purchases journal | Total purchases $66,400 |
| Cash receipts journal | Accounts receivable column total $131,000 |
| Cash payments journal | Accounts payable column total $47,500 |

### Instructions

**a.** What is the balance of the Accounts Receivable control account after the monthly postings on July 31?

**b.** What is the balance of the Accounts Payable control account after the monthly postings on July 31?

**c.** To what account(s) is the column total of $161,400 in the sales journal posted?

**d.** To what account(s) is the accounts receivable column total of $131,000 in the cash receipts journal posted?

**E7.2 (LO 2)** Writing Presented below is the subsidiary accounts receivable account of Jill Longley.

*Explain postings to subsidiary ledger.*

| Date | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|
| 2020 | | | | |
| Sept. 2 | S31 | 61,000 | | 61,000 |
| 9 | G4 | | 14,000 | 47,000 |
| 27 | CR8 | | 47,000 | — |

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**Instructions**

Write a memo to Sara Fogelman, chief financial officer, that explains each transaction.

*Post various journals to control and subsidiary accounts.*

**E7.3 (LO 2, 3)** On September 1, the balance of the Accounts Receivable control account in the general ledger of Montgomery Company was $10,960. The customers' subsidiary ledger contained account balances as follows: Hurley $1,440, Andino $2,640, Fowler $2,060, and Sogard $4,820. At the end of September, the various journals contained the following information.

**Sales journal:** Sales to Sogard $800, to Hurley $1,260, to Giambi $1,330, and to Fowler $1,600.
**Cash receipts journal:** Cash received from Fowler $1,310, from Sogard $3,300, from Giambi $380, from Andino $1,800, and from Hurley $1,240.
**General journal:** An allowance is granted to Sogard $220.

**Instructions**

**a.** Set up control and subsidiary accounts and enter the beginning balances. Do not construct the journals.

**b.** Post the various journals. Post the items as individual items or as totals, whichever would be the appropriate procedure. (No sales discounts given.)

**c.** Prepare a schedule of accounts receivable and prove the agreement of the controlling account with the subsidiary ledger at September 30, 2020.

*Determine control and subsidiary ledger balances for accounts receivable.*

**E7.4 (LO 2)** Kieschnick Company has a balance in its Accounts Receivable control account of $10,000 on January 1, 2020. The subsidiary ledger contains three accounts: Bixler Company, balance $4,000; Cuddyer Company, balance $2,500; and Freeze Company. During January, the following receivable-related transactions occurred.

| | Credit Sales | Collections | Returns |
|---|---|---|---|
| Bixler Company | $9,000 | $8,000 | $ -0- |
| Cuddyer Company | 7,000 | 2,500 | 3,000 |
| Freeze Company | 8,500 | 9,000 | -0- |

**Instructions**

**a.** What is the January 1 balance in the Freeze Company subsidiary account?

**b.** What is the January 31 balance in the control account?

**c.** Compute the balances in the subsidiary accounts at the end of the month.

**d.** Which January transaction would not be recorded in a special journal?

*Determine control and subsidiary ledger balances for accounts payable.*

**E7.5 (LO 2)** Pennington Company has a balance in its Accounts Payable control account of $9,250 on January 1, 2020. The subsidiary ledger contains three accounts: Hale Company, balance $3,000; Janish Company, balance $1,875; and Valdez Company. During January, the following payable-related transactions occurred.

| | Purchases | Payments | Returns |
|---|---|---|---|
| Hale Company | $6,750 | $6,000 | $ -0- |
| Janish Company | 5,250 | 1,875 | 2,250 |
| Valdez Company | 6,375 | 6,750 | -0- |

**Instructions**

**a.** What is the January 1 balance in the Valdez Company subsidiary account?

**b.** What is the January 31 balance in the control account?

**c.** Compute the balances in the subsidiary accounts at the end of the month.

**d.** Which January transaction would not be recorded in a special journal?

*Record transactions in sales and purchases journal.*

**E7.6 (LO 3)** Gomes Company uses special journals and a general journal. The following transactions occurred during September 2020.

Sept. 2 Sold merchandise on account to H. Drew, invoice no. 101, $620, terms n/30. The cost of the merchandise sold was $420.
10 Purchased merchandise on account from A. Pagan $650, terms 2/10, n/30.
12 Purchased office equipment on account from R. Cairo $6,500.
21 Sold merchandise on account to G. Holliday, invoice no. 102 for $800, terms 2/10, n/30. The cost of the merchandise sold was $480.

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25 Purchased merchandise on account from D. Downs $860, terms n/30.
27 Sold merchandise to S. Miller for $700 cash. The cost of the merchandise sold was $400.

**Instructions**

**a.** Prepare a sales journal (see Illustration 7.7) and a single-column purchases journal (see Illustration 7.13). (Use page 1 for each journal.)

**b.** Record the transaction(s) for September that should be journalized in the sales journal and the purchases journal.

**E7.7 (LO 3)** R. Santiago Co. uses special journals and a general journal. The following transactions occurred during May 2020.

*Record transactions in cash receipts and cash payments journal.*

May 1 R. Santiago invested $40,000 cash in the business.
2 Sold merchandise to Lawrie Co. for $6,300 cash. The cost of the merchandise sold was $4,200.
3 Purchased merchandise for $7,700 from J. Moskos using check no. 101.
14 Paid salary to H. Rivera $700 by issuing check no. 102.
16 Sold merchandise on account to K. Stanton for $900, terms n/30. The cost of the merchandise sold was $630.
22 A check of $9,000 is received from M. Mangini in full for invoice 101; no discount given.

**Instructions**

**a.** Prepare a multiple-column cash receipts journal (see Illustration 7.9) and a multiple-column cash payments journal (see Illustration 7.16). (Use page 1 for each journal.)

**b.** Record the transaction(s) for May that should be journalized in the cash receipts journal and cash payments journal.

**E7.8 (LO 3)** Francisco Company uses the columnar cash journals illustrated in the textbook. In April, the following selected cash transactions occurred.

*Explain journalizing in cash journals.*

**1.** Made a refund to a customer as an allowance for damaged goods.
**2.** Received collection from customer within the 3% discount period.
**3.** Purchased merchandise for cash.
**4.** Paid a creditor within the 3% discount period.
**5.** Received collection from customer after the 3% discount period had expired.
**6.** Paid freight on merchandise purchased.
**7.** Paid cash for office equipment.
**8.** Received cash refund from supplier for merchandise returned.
**9.** Withdrew cash for personal use of owner.
**10.** Made cash sales.

**Instructions**

Indicate (a) the journal, and (b) the columns in the journal that should be used in recording each transaction.

**E7.9 (LO 3)** **Writing** Hasselback Company has the following selected transactions during March.

*Journalize transactions in general journal and explain postings.*

Mar. 2 Purchased equipment costing $7,400 from Bole Company on account.
5 Received credit of $410 from Carwell Company for merchandise damaged in shipment to Hasselback.
7 Issued credit of $400 to Dempsey Company for merchandise the customer returned. The returned merchandise had a cost of $260.

Hasselback Company uses a one-column purchases journal, a sales journal, the columnar cash journals used in the text, and a general journal.

**Instructions**

**a.** Journalize the transactions in the general journal.

**b.** In a brief memo to the president of Hasselback Company, explain the postings to the control and subsidiary accounts from each type of journal.

**E7.10 (LO 3)** The following are some typical transactions incurred by Ricketts Company.

*Indicate journalizing in special journals.*

**1.** Payment of creditors on account.
**2.** Return of merchandise sold for credit.

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3. Collection on account from customers.
4. Sale of land for cash.
5. Sale of merchandise on account.
6. Sale of merchandise for cash.
7. Received credit for merchandise purchased on credit.
8. Sales discount taken on goods sold.
9. Payment of employee wages.
10. Income summary closed to owner's capital.
11. Depreciation on building.
12. Purchase of office supplies for cash.
13. Purchase of merchandise on account.

**Instructions**

For each transaction, indicate whether it would normally be recorded in a cash receipts journal, cash payments journal, sales journal, single-column purchases journal, or general journal.

*Explain posting to control account and subsidiary ledger.*

**E7.11 (LO 2, 3)** The general ledger of Hensley Company contained the following Accounts Payable control account (in T-account form). Also shown is the related subsidiary ledger.

**GENERAL LEDGER**

**Accounts Payable**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. | 15 | General journal | 1,400 | Feb. | 1 | Balance | 26,025 |
| | 28 | ? | ? | | 5 | General journal | 265 |
| | | | | | 11 | General journal | 550 |
| | | | | | 28 | Purchases | 13,400 |
| | | | | Feb. | 28 | Balance | 10,500 |

**ACCOUNTS PAYABLE LEDGER**

**Benton**

| | | |
|---|---|---|
| Feb. | 28 | Bal. 4,600 |

**Parks**

| | | |
|---|---|---|
| Feb. | 28 | Bal. ? |

**Dooley**

| | | |
|---|---|---|
| Feb. | 28 | Bal. 2,300 |

**Instructions**

**a.** Indicate the missing posting reference and amount in the control account, and the missing ending balance in the subsidiary ledger.

**b.** Indicate the amounts in the control account that were dual-posted (i.e., posted to the control account and the subsidiary accounts).

*Prepare purchases and general journals.*

**E7.12 (LO 2, 3)** Selected accounts from the ledgers of Youngblood Company at July 31 showed the following.

**GENERAL LEDGER**

**Equipment** No. 157

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| July 1 | | G1 | 3,900 | | 3,900 |

**Accounts Payable** No. 201

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| July 1 | | G1 | | 3,900 | 3,900 |
| 15 | | G1 | | 400 | 4,300 |
| 18 | | G1 | 100 | | 4,200 |
| 25 | | G1 | 200 | | 4,000 |
| 31 | | P1 | | 9,300 | 13,300 |

**Inventory** No. 120

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| July 15 | | G1 | 400 | | 400 |
| 18 | | G1 | | 100 | 300 |
| 25 | | G1 | | 200 | 100 |
| 31 | | P1 | 9,300 | | 9,400 |

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**ACCOUNTS PAYABLE LEDGER**

**Flaherty Equipment Co.**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| July 1 | | G1 | | 3,900 | 3,900 |

**Weller Co.**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| July 14 | | P1 | | 1,100 | 1,100 |
| 25 | | G1 | 200 | | 900 |

**Marsh Co.**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| July 3 | | P1 | | 2,400 | 2,400 |
| 20 | | P1 | | 1,700 | 4,100 |

**Yates Co.**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| July 12 | | P1 | | 500 | 500 |
| 21 | | P1 | | 600 | 1,100 |

**Lange Corp**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| July 17 | | P1 | | 1,400 | 1,400 |
| 18 | | G1 | 100 | | 1,300 |
| 29 | | P1 | | 1,600 | 2,900 |

**Bernardo Inc.**

| Date | Explanation | Ref. | Debit | Credit | Balance |
|---|---|---|---|---|---|
| July 15 | | G1 | | 400 | 400 |

### Instructions

From the data prepare:

**a.** The single-column purchases journal for July.

**b.** The general journal entries for July.

**E7.13 (LO 2, 3)** Tresh Products uses both special journals and a general journal as described in this chapter. Tresh also posts customers' accounts in the accounts receivable subsidiary ledger. The postings for the most recent month are included in the subsidiary T-accounts below.

*Determine correct posting amount to control account.*

**Estes**

| | | |
|---|---|---|
| Bal. | 340 | 250 |
| | 200 | |

**Gehrke**

| | | |
|---|---|---|
| Bal. | 150 | 150 |
| | 290 | |

**Truong**

| | | |
|---|---|---|
| Bal. | –0– | 145 |
| | 145 | |

**Weiser**

| | | |
|---|---|---|
| Bal. | 120 | 120 |
| | 190 | |
| | 150 | |

### Instructions

Determine the correct amount of the end-of-month posting from the sales journal to the Accounts Receivable control account.

**E7.14 (LO 3)** Selected account balances for Hulse Company at January 1, 2020, are presented below.

*Compute balances in various accounts.*

| | |
|---|---|
| Accounts Payable | $14,000 |
| Accounts Receivable | 22,000 |
| Cash | 17,000 |
| Inventory | 13,500 |

Hulse's sales journal for January shows a total of $110,000 in the selling-price column, and its one-column purchases journal for January shows a total of $77,000.

The column totals in Hulse's cash receipts journal are Cash Dr. $61,000, Sales Discounts Dr. $1,100, Accounts Receivable Cr. $45,000, Sales Revenue Cr. $6,000, and Other Accounts Cr. $11,100.

The column totals in Hulse's cash payments journal for January are Cash Cr. $55,000, Inventory Cr. $1,000, Accounts Payable Dr. $46,000, and Other Accounts Dr. $10,000. Hulse's total cost of goods sold for January is $63,600.

Accounts Payable, Accounts Receivable, Cash, Inventory, and Sales Revenue are not involved in the Other Accounts column in either the cash receipts or cash payments journal, and are not involved in any general journal entries.

### Instructions

Compute the January 31 balance for Hulse in the following accounts.

**a.** Accounts Payable.

**b.** Accounts Receivable.

**c.** Cash.

**d.** Inventory.

**e.** Sales Revenue.

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## Problems: Set A

*Journalize transactions in cash receipts journal; post to control account and subsidiary ledger.*

GLS

**P7.1A (LO 2, 3)** Kozma Company's chart of accounts includes the following selected accounts.

| | | | |
|---|---|---|---|
| 101 | Cash | 401 | Sales Revenue |
| 112 | Accounts Receivable | 414 | Sales Discounts |
| 120 | Inventory | 505 | Cost of Goods Sold |
| 301 | Owner's Capital | | |

On April 1, the accounts receivable ledger of Kozma Company showed the following balances: Morrow $1,550, Rose $1,200, Jennings Co. $2,900, and Dent $2,200. The April transactions involving the receipt of cash were as follows.

Apr. 1 The owner, T. Kozma, invested additional cash in the business $7,200.
4 Received check for payment of account from Dent less 2% cash discount.
5 Received check for $920 in payment of invoice no. 307 from Jennings Co.
8 Made cash sales of merchandise totaling $7,245. The cost of the merchandise sold was $4,347.
10 Received check for $600 in payment of invoice no. 309 from Morrow.
11 Received cash refund from a supplier for damaged merchandise $740.
23 Received check for $1,000 in payment of invoice no. 310 from Jennings Co.
29 Received check for payment of account from Rose (no cash discount allowed).

### Instructions

a. Balancing totals $25,452

**a.** Journalize the transactions above in a six-column cash receipts journal with columns for Cash Dr., Sales Discounts Dr., Accounts Receivable Cr., Sales Revenue Cr., Other Accounts Cr., and Cost of Goods Sold Dr./Inventory Cr. Foot and cross-foot the journal.

**b.** Insert the beginning balances in the Accounts Receivable control and subsidiary accounts, and post the April transactions to these accounts.

c. Accounts Receivable $1,930

**c.** Prove the agreement of the control account and subsidiary account balances.

*Journalize transactions in cash payments journal; post to control account and subsidiary ledgers.*

GLS

**P7.2A (LO 2, 3)** Reineke Company's chart of accounts includes the following selected accounts.

| | | | |
|---|---|---|---|
| 101 | Cash | 201 | Accounts Payable |
| 120 | Inventory | 306 | Owner's Drawings |
| 130 | Prepaid Insurance | 505 | Cost of Goods Sold |
| 157 | Equipment | | |

On October 1, the accounts payable ledger of Reineke Company showed the following balances: Uggla Company $2,700, Orr Co. $2,500, Rosenthal Co. $1,800, and Clevenger Company $3,700. The October transactions involving the payment of cash were as follows.

Oct. 1 Purchased merchandise, check no. 63, $300.
3 Purchased equipment, check no. 64, $800.
5 Paid Uggla Company balance due of $2,700, less 2% discount, check no. 65, $2,646.
10 Purchased merchandise, check no. 66, $2,550.
15 Paid Rosenthal Co. balance due of $1,800, check no. 67.
16 C. Reineke, the owner, pays his personal insurance premium of $400, check no. 68.
19 Paid Orr Co. in full for invoice no. 610, $2,000 less 2% cash discount, check no. 69, $1,960.
29 Paid Clevenger Company in full for invoice no. 264, $2,500, check no. 70.

### Instructions

a. Balancing totals $13,050

**a.** Journalize the transactions above in a four-column cash payments journal with columns for Other Accounts Dr., Accounts Payable Dr., Inventory Cr., and Cash Cr. Foot and cross-foot the journal.

**b.** Insert the beginning balances in the Accounts Payable control and subsidiary accounts, and post the October transactions to these accounts.

c. Accounts Payable $1,700

**c.** Prove the agreement of the control account and the subsidiary account balances.

*Journalize transactions in multi-column purchases journal and sales journal; post to the general and subsidiary ledgers.*

GLS

**P7.3A (LO 2, 3)** The chart of accounts of LR Company includes the following selected accounts.

| | | | |
|---|---|---|---|
| 112 | Accounts Receivable | 401 | Sales Revenue |
| 120 | Inventory | 412 | Sales Returns and Allowances |
| 126 | Supplies | 505 | Cost of Goods Sold |
| 157 | Equipment | 610 | Advertising Expense |
| 201 | Accounts Payable | | |

In July, the following transactions were completed. All purchases and sales were on account. The cost of all merchandise sold was 70% of the sales price.

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July 1 Purchased merchandise from Eby Company $8,000.
2 Received freight bill from Shaw Shipping on Eby purchase $400.
3 Made sales to Fort Company $1,300 and to Hefner Bros. $1,500.
5 Purchased merchandise from Getz Company $3,200.
8 Received credit on merchandise returned to Getz Company $300.
13 Purchased store supplies from Dayne Supply $720.
15 Purchased merchandise from Eby Company $3,600 and from Bosco Company $4,300.
16 Made sales to Aybar Company $3,450 and to Hefner Bros. $1,870.
18 Received bill for advertising from Welton Advertisements $600.
21 Sales were made to Fort Company $310 and to Duncan Company $2,800.
22 Granted allowance to Fort Company for merchandise damaged in shipment $40.
24 Purchased merchandise from Getz Company $3,000.
26 Purchased equipment from Dayne Supply $900.
28 Received freight bill from Shaw Shipping on Getz purchase of July 24, $380.
30 Sales were made to Aybar Company $5,600.

### Instructions

**a.** Journalize the transactions above in a purchases journal, a sales journal, and a general journal. The purchases journal should have the following column headings: Date, Account Credited (Debited), Ref., Accounts Payable Cr., Inventory Dr., and Other Accounts Dr.

**b.** Post to both the general and subsidiary ledger accounts. (Assume that all accounts have zero beginning balances.)

**c.** Prove the agreement of the control and subsidiary accounts.

a. Purchases journal—Accounts Payable $25,100
Sales journal—Sales Revenue $16,830

c. Accounts Receivable $16,790
Accounts Payable $24,800

**P7.4A (LO 2, 3)** Selected accounts from the chart of accounts of Mercer Company are shown below.

*Journalize transactions in special journals.*

GLS

| | | | |
|---|---|---|---|
| 101 | Cash | 401 | Sales Revenue |
| 112 | Accounts Receivable | 412 | Sales Returns and Allowances |
| 120 | Inventory | 414 | Sales Discounts |
| 126 | Supplies | 505 | Cost of Goods Sold |
| 157 | Equipment | 726 | Salaries and Wages Expense |
| 201 | Accounts Payable | | |

The cost of all merchandise sold was 60% of the sales price. During January, Mercer completed the following transactions.

Jan. 3 Purchased merchandise on account from Gallagher Co. $9,000.
4 Purchased supplies for cash $80.
4 Sold merchandise on account to Wheeler $5,250, invoice no. 371, terms 1/10, n/30.
5 Returned $300 worth of damaged goods purchased on account from Gallagher Co. on January 3.
6 Made cash sales for the week totaling $3,150.
8 Purchased merchandise on account from Phegley Co. $4,500.
9 Sold merchandise on account to Linton Corp. $5,400, invoice no. 372, terms 1/10, n/30.
11 Purchased merchandise on account from Cora Co. $3,700.
13 Paid in full Gallagher Co. on account less a 2% discount.
13 Made cash sales for the week totaling $6,260.
15 Received payment from Linton Corp. for invoice no. 372.
15 Paid semi-monthly salaries of $14,300 to employees.
17 Received payment from Wheeler for invoice no. 371.
17 Sold merchandise on account to Delaney Co. $1,200, invoice no. 373, terms 1/10, n/30.
19 Purchased equipment on account from Dozier Corp. $5,500.
20 Cash sales for the week totaled $3,200.
20 Paid in full Phegley Co. on account less a 2% discount.
23 Purchased merchandise on account from Gallagher Co. $7,800.
24 Purchased merchandise on account from Atchison Corp. $5,100.
27 Made cash sales for the week totaling $4,230.
30 Received payment from Delaney Co. for invoice no. 373.
31 Paid semi-monthly salaries of $13,200 to employees.
31 Sold merchandise on account to Wheeler $9,330, invoice no. 374, terms 1/10, n/30.

Mercer Company uses the following journals.

**1.** Sales journal.

**2.** Single-column purchases journal.

**3.** Cash receipts journal with columns for Cash Dr., Sales Discounts Dr., Accounts Receivable Cr., Sales Revenue Cr., Other Accounts Cr., and Cost of Goods Sold Dr./Inventory Cr.

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4. Cash payments journal with columns for Other Accounts Dr., Accounts Payable Dr., Inventory Cr., and Cash Cr.
5. General journal.

### Instructions

a. Sales journal $21,180
Purchases journal $30,100
Cash receipts journal balancing total $38,794
Cash payments journal balancing total $40,780

Using the selected accounts provided:

**a.** Record the January transactions in the appropriate journal noted.

**b.** Foot and cross-foot all special journals.

**c.** Show how postings would be made by placing ledger account numbers and checkmarks as needed in the journals. (Actual posting to ledger accounts is not required.)

*Journalize in sales and cash receipts journals; post; prepare a trial balance; prove control to subsidiary; prepare adjusting entries; prepare an adjusted trial balance.*

**P7.5A (LO 2, 3)** Presented below are the purchases and cash payments journals for Fornelli Co. for its first month of operations.

**PURCHASES JOURNAL** **P1**

| Date | Account Credited | Ref. | Inventory Dr. Accounts Payable Cr. |
|---|---|---|---|
| July 4 | N. Alvarado | | 6,800 |
| 5 | F. Rees | | 8,100 |
| 11 | J. Gallup | | 5,920 |
| 13 | C. Werly | | 15,300 |
| 20 | M. Mangus | | 7,900 |
| | | | 44,020 |

**CASH PAYMENTS JOURNAL** **CP1**

| Date | Account Debited | Ref. | Other Accounts Dr. | Accounts Payable Dr. | Inventory Cr. | Cash Cr. |
|---|---|---|---|---|---|---|
| July 4 | Supplies | | 600 | | | 600 |
| 10 | F. Rees | | | 8,100 | 81 | 8,019 |
| 11 | Prepaid Rent | | 6,000 | | | 6,000 |
| 15 | N. Alvarado | | | 6,800 | | 6,800 |
| 19 | Owner's Drawings | | 2,500 | | | 2,500 |
| 21 | C. Werly | | | 15,300 | 153 | 15,147 |
| | | | 9,100 | 30,200 | 234 | 39,066 |

In addition, the following transactions have not been journalized for July. The cost of all merchandise sold was 65% of the sales price.

July 1 The founder, N. Fornelli, invests $80,000 in cash.
6 Sell merchandise on account to Dow Co. $6,200 terms 1/10, n/30.
7 Make cash sales totaling $8,000.
8 Sell merchandise on account to S. Goebel $4,600, terms 1/10, n/30.
10 Sell merchandise on account to W. Leiss $4,900, terms 1/10, n/30.
13 Receive payment in full from S. Goebel.
16 Receive payment in full from W. Leiss.
20 Receive payment in full from Dow Co.
21 Sell merchandise on account to H. Kenney $5,000, terms 1/10, n/30.
29 Returned damaged goods to N. Alvarado and received cash refund of $420.

### Instructions

**a.** Open the following accounts in the general ledger.

| | | | |
|---|---|---|---|
| 101 | Cash | 306 | Owner's Drawings |
| 112 | Accounts Receivable | 401 | Sales Revenue |
| 120 | Inventory | 414 | Sales Discounts |
| 126 | Supplies | 505 | Cost of Goods Sold |
| 131 | Prepaid Rent | 631 | Supplies Expense |
| 201 | Accounts Payable | 729 | Rent Expense |
| 301 | Owner's Capital | | |

b. Sales journal total $20,700
Cash receipts journal balancing total $109,320

**b.** Journalize the transactions that have not been journalized in the sales journal and the cash receipts journal (see Illustration 7.9).

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**c.** Post to the accounts receivable and accounts payable subsidiary ledgers. Follow the sequence of transactions as shown in the problem.

**d.** Post the individual entries and totals to the general ledger.

**e.** Prepare a trial balance at July 31, 2020.

e. Totals $122,520

**f.** Determine whether the subsidiary ledgers agree with the control accounts in the general ledger.

f. Accounts Receivable $5,000
Accounts Payable $13,820

**g.** The following adjustments at the end of July are necessary.

**1.** A count of supplies indicates that $140 is still on hand.

**2.** Recognize rent expense for July, $500.

Prepare the necessary entries in the general journal. Post the entries to the general ledger.

**h.** Prepare an adjusted trial balance at July 31, 2020.

h. Totals $122,520

**P7.6A (LO 2, 3)** The post-closing trial balance for Horner Co. is shown below.

*Journalize in special journals; post; prepare a trial balance.*

GLS

**Horner Co.**
**Post-Closing Trial Balance**
**December 31, 2020**

| | Debit | Credit |
|---|---|---|
| Cash | $ 41,500 | |
| Accounts Receivable | 15,000 | |
| Notes Receivable | 45,000 | |
| Inventory | 23,000 | |
| Equipment | 6,450 | |
| Accumulated Depreciation—Equipment | | $ 1,500 |
| Accounts Payable | | 43,000 |
| Owner's Capital | | 86,450 |
| | $130,950 | $130,950 |

The subsidiary ledgers contain the following information: (1) accounts receivable—B. Hannigan $2,500, I. Kirk $7,500, and T. Hodges $5,000; (2) accounts payable—T. Igawa $12,000, D. Danford $18,000, and K. Thayer $13,000. The cost of all merchandise sold was 60% of the sales price.

The transactions for January 2021 are as follows.

Jan. 3 Sell merchandise to M. Ziesmer $8,000, terms 2/10, n/30.
5 Purchase merchandise from E. Pheatt $2,000, terms 2/10, n/30.
7 Receive a check from T. Hodges $3,500.
11 Pay freight on merchandise purchased $300.
12 Pay rent of $1,000 for January.
13 Receive payment in full from M. Ziesmer.
14 Post all entries to the subsidiary ledgers. Issued credit of $300 to B. Hannigan for returned merchandise.
15 Send K. Thayer a check for $12,870 in full payment of account, discount $130.
17 Purchase merchandise from G. Roland $1,600, terms 2/10, n/30.
18 Pay sales salaries of $2,800 and office salaries $2,000.
20 Give D. Danford a 60-day note for $18,000 in full payment of account payable.
23 Total cash sales amount to $9,100.
24 Post all entries to the subsidiary ledgers. Sell merchandise on account to I. Kirk $7,400, terms 1/10, n/30.
27 Send E. Pheatt a check for $950.
29 Receive payment on a note of $40,000 from B. Stout.
30 Post all entries to the subsidiary ledgers. Return merchandise of $300 to G. Roland for credit.

## Instructions

**a.** Open general and subsidiary ledger accounts for the following.

| | | | |
|---|---|---|---|
| 101 | Cash | 301 | Owner's Capital |
| 112 | Accounts Receivable | 401 | Sales Revenue |
| 115 | Notes Receivable | 412 | Sales Returns and Allowances |
| 120 | Inventory | 414 | Sales Discounts |
| 157 | Equipment | 505 | Cost of Goods Sold |
| 158 | Accumulated Depreciation—Equipment | 726 | Salaries and Wages Expense |
| 200 | Notes Payable | 729 | Rent Expense |
| 201 | Accounts Payable | | |

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b. Sales journal $15,400
Purchases journal $3,600
Cash receipts journal (balancing) $66,060
Cash payments journal (balancing) $20,050

d. Totals $144,800

e. Accounts Receivable $18,600
Accounts Payable $14,350

**b.** Record the January transactions in a sales journal, a single-column purchases journal, a cash receipts journal (see Illustration 7.9), a cash payments journal (see Illustration 7.16), and a general journal.

**c.** Post the appropriate amounts to the general ledger.

**d.** Prepare a trial balance at January 31, 2021.

**e.** Determine whether the subsidiary ledgers agree with controlling accounts in the general ledger.

## Ethics Case

**EC7** Wiemers Products Company operates three divisions, each with its own manufacturing plant and marketing/sales force. The corporate headquarters and central accounting office are in Wiemers, and the plants are in Freeport, Rockport, and Bayport, all within 50 miles of Wiemers. Corporate management treats each division as an independent profit center and encourages competition among them. They each have similar but different product lines. As a competitive incentive, bonuses are awarded each year to the employees of the fastest-growing and most-profitable division.

Indy Grover is the manager of Wiemers's centralized computerized accounting operation that enters the sales transactions and maintains the accounts receivable for all three divisions. Indy came up in the accounting ranks from the Bayport division where his wife, several relatives, and many friends still work.

As sales documents are entered into the computer, the originating division is identified by code. Most sales documents (95%) are coded, but some (5%) are not coded or are coded incorrectly. As the manager, Indy has instructed the data-entry personnel to assign the Bayport code to all uncoded and incorrectly coded sales documents. This is done, he says, "in order to expedite processing and to keep the computer files current since they are updated daily." All receivables and cash collections for all three divisions are handled by Wiemers as one subsidiary accounts receivable ledger.

### Instructions

**a.** Who are the stakeholders in this situation?

**b.** What are the ethical issues in this case?

**c.** How might the system be improved to prevent this situation?

## Comprehensive Accounting Cycle Review

**ACR7.1 (Perpetual Method)** Jeter Co. uses a perpetual inventory system and both an accounts receivable and an accounts payable subsidiary ledger. Balances related to both the general ledger and the subsidiary ledgers for Jeter are indicated in the working papers presented below. Also following are a series of transactions for Jeter Co. for the month of January. Credit sales terms are 2/10, n/30. The cost of all merchandise sold was 60% of the sales price.

**GENERAL LEDGER**

| Account Number | Account Title | January 1 Opening Balance |
|---|---|---|
| 101 | Cash | $35,750 |
| 112 | Accounts Receivable | 13,000 |
| 115 | Notes Receivable | 39,000 |
| 120 | Inventory | 18,000 |
| 126 | Supplies | 1,000 |
| 130 | Prepaid Insurance | 2,000 |
| 157 | Equipment | 6,450 |
| 158 | Accumulated Depreciation—Equip. | 1,500 |
| 201 | Accounts Payable | 35,000 |
| 301 | Owner's Capital | 78,700 |

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**Schedule of Accounts Receivable**
(from accounts receivable subsidiary ledger)

| Customer | January 1 Opening Balance |
|---|---|
| R. Beltre | $1,500 |
| B. Santos | 7,500 |
| S. Mahay | 4,000 |

**Schedule of Accounts Payable**
(from accounts payable subsidiary ledger)

| Creditor | January 1 Opening Balance |
|---|---|
| S. Meek | $ 9,000 |
| R. Moses | 15,000 |
| D. Saito | 11,000 |

Jan. 3 Sell merchandise on account to B. Corpas $3,600, invoice no. 510, and to J. Revere $1,800, invoice no. 511.
5 Purchase merchandise from S. Gamel $5,000 and D. Posey $2,200, terms n/30.
7 Receive checks from S. Mahay $4,000 and B. Santos $2,000 after discount period has lapsed.
8 Pay freight on merchandise purchased $235.
9 Send checks to S. Meek for $9,000 less 2% cash discount, and to D. Saito for $11,000 less 1% cash discount.
9 Issue credit of $300 to J. Revere for merchandise returned.
10 Daily cash sales from January 1 to January 10 total $15,500. Make one journal entry for these sales.
11 Sell merchandise on account to R. Beltre $1,600, invoice no. 512, and to S. Mahay $900, invoice no. 513.
12 Pay rent of $1,000 for January.
13 Receive payment in full from B. Corpas and J. Revere less cash discounts.
15 Withdraw $800 cash by M. Jeter for personal use.
15 Post all entries to the subsidiary ledgers.
16 Purchase merchandise from D. Saito $15,000, terms 1/10, n/30; S. Meek $14,200, terms 2/10, n/30; and S. Gamel $1,500, terms n/30.
17 Pay $400 cash for office supplies.
18 Return $200 of merchandise to S. Meek and receive credit.
20 Daily cash sales from January 11 to January 20 total $20,100. Make one journal entry for these sales.
21 Issue $15,000 note, maturing in 90 days, to R. Moses in payment of balance due.
21 Receive payment in full from S. Mahay less cash discount.
22 Sell merchandise on account to B. Corpas $2,700, invoice no. 514, and to R. Beltre $2,300, invoice no. 515.
22 Post all entries to the subsidiary ledgers.
23 Send checks to D. Saito and S. Meek for full payment less cash discounts.
25 Sell merchandise on account to B. Santos $3,500, invoice no. 516, and to J. Revere $6,100, invoice no. 517.
27 Purchase merchandise from D. Saito $14,500, terms 1/10, n/30; D. Posey $3,200, terms n/30; and S. Gamel $5,400, terms n/30.
27 Post all entries to the subsidiary ledgers.
28 Pay $200 cash for office supplies.
31 Daily cash sales from January 21 to January 31 total $21,300. Make one journal entry for these sales.
31 Pay sales salaries $4,300 and office salaries $3,800.

## Instructions

**a.** Record the January transactions in a sales journal, a single-column purchases journal, a cash receipts journal as shown in Illustration 7.9, a cash payments journal as shown in Illustration 7.16, and a two-column general journal.

**b.** Post the journals to the general ledger.

**c.** Prepare a trial balance at January 31, 2020, in the trial balance columns of the worksheet. Complete the worksheet using the following additional information.

**1.** Office supplies at January 31 total $900.

**2.** Insurance coverage expires on October 31, 2020.

**3.** Annual depreciation on the equipment is $1,500.

**4.** Interest of $50 has accrued on the note payable.

**d.** Prepare a multiple-step income statement and an owner's equity statement for January and a classified balance sheet at the end of January.

**e.** Prepare and post adjusting and closing entries.

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**f.** Prepare a post-closing trial balance, and determine whether the subsidiary ledgers agree with the control accounts in the general ledger.

**ACR7.2 (Periodic Inventory)** McBride Company has the following opening account balances in its general and subsidiary ledgers on January 1 and uses the periodic inventory system. All accounts have normal debit and credit balances.

**GENERAL LEDGER**

| Account Number | Account Title | January 1 Opening Balance |
|---|---|---|
| 101 | Cash | $33,750 |
| 112 | Accounts Receivable | 13,000 |
| 115 | Notes Receivable | 39,000 |
| 120 | Inventory | 20,000 |
| 126 | Supplies | 1,000 |
| 130 | Prepaid Insurance | 2,000 |
| 157 | Equipment | 6,450 |
| 158 | Accumulated Depreciation—Equip. | 1,500 |
| 201 | Accounts Payable | 35,000 |
| 301 | Owner's Capital | 78,700 |

**Schedule of Accounts Receivable**
(from accounts receivable subsidiary ledger)

| Customer | January 1 Opening Balance |
|---|---|
| R. Kotsay | $1,500 |
| B. Boxberger | 7,500 |
| S. Andrus | 4,000 |

**Schedule of Accounts Payable**
(from accounts payable subsidiary ledger)

| Creditor | January 1 Opening Balance |
|---|---|
| S. Otero | $ 9,000 |
| R. Rasmus | 15,000 |
| D. Baroni | 11,000 |

In addition, the following transactions have not been journalized for January 2020.

Jan. 3 Sell merchandise on account to B. Berg $3,600, invoice no. 510, and J. Lutz $1,800, invoice no. 511.
5 Purchase merchandise on account from S. Colt $5,000 and D. Kahn $2,700.
7 Receive checks for $4,000 from S. Andrus and $2,000 from B. Boxberger.
8 Pay freight on merchandise purchased $180.
9 Send checks to S. Otero for $9,000 and D. Baroni for $11,000.
9 Issue credit of $300 to J. Lutz for merchandise returned.
10 Cash sales from January 1 to January 10 total $15,500. Make one journal entry for these sales.
11 Sell merchandise on account to R. Kotsay for $2,900, invoice no. 512, and to S. Andrus $900, invoice no. 513.
Post all entries to the subsidiary ledgers.
12 Pay rent of $1,000 for January.
13 Receive payment in full from B. Berg and J. Lutz.
15 Withdraw $800 cash by I. McBride for personal use.
16 Purchase merchandise on account from D. Baroni for $12,000, from S. Otero for $13,900, and from S. Colt for $1,500.
17 Pay $400 cash for supplies.
18 Return $200 of merchandise to S. Otero and receive credit.
20 Cash sales from January 11 to January 20 total $17,500. Make one journal entry for these sales.
21 Issue $15,000 note to R. Rasmus in payment of balance due.
21 Receive payment in full from S. Andrus.
Post all entries to the subsidiary ledgers.
22 Sell merchandise on account to B. Berg for $3,700, invoice no. 514, and to R. Kotsay for $800, invoice no. 515.
23 Send checks to D. Baroni and S. Otero in full payment.
25 Sell merchandise on account to B. Boxberger for $3,500, invoice no. 516, and to J. Lutz for $6,100, invoice no. 517.
27 Purchase merchandise on account from D. Baroni for $12,500, from D. Kahn for $1,200, and from S. Colt for $2,800.
28 Pay $200 cash for office supplies.
31 Cash sales from January 21 to January 31 total $22,920. Make one journal entry for these sales.
31 Pay sales salaries of $4,300 and office salaries of $3,600.

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### Instructions

**a.** Record the January transactions in the appropriate journal—sales, purchases, cash receipts, cash payments, and general.

**b.** Post the journals to the general and subsidiary ledgers. Add and number new accounts in an orderly fashion as needed.

**c.** Prepare a trial balance at January 31, 2020, using a worksheet. Complete the worksheet using the following additional information.

**1.** Supplies at January 31 total $700.

**2.** Insurance coverage expires on October 31, 2020.

**3.** Annual depreciation on the equipment is $1,500.

**4.** Interest of $30 has accrued on the note payable.

**5.** Inventory at January 31 is $15,000.

**d.** Prepare a multiple-step income statement and an owner's equity statement for January and a classified balance sheet at the end of January.

**e.** Prepare and post the adjusting and closing entries.

**f.** Prepare a post-closing trial balance, and determine whether the subsidiary ledgers agree with the control accounts in the general ledger.

## Expand Your Critical Thinking

### Real-World Focus

**CT7.1** **Sage 50** provides some of the leading accounting software packages. Information related to its products is found at its website.

### Instructions

Review the features related to its products and then be ready to discuss them with the class.

### Decision-Making Across the Organization

**CT7.2** Ermler & Trump is a wholesaler of small appliances and parts. Ermler & Trump is operated by two owners, Jack Ermler and Andrea Trump. In addition, the company has one employee, a repair specialist, who is on a fixed salary. Revenues are earned through the sale of appliances to retailers (approximately 75% of total revenues), appliance parts to do-it-yourselfers (10%), and the repair of appliances brought to the store (15%). Appliance sales are made on both a credit and cash basis. Customers are billed on prenumbered sales invoices. Credit terms are always net/30 days. All parts sales and repair work are cash only.

Merchandise is purchased on account from the manufacturers of both the appliances and the parts. Practically all suppliers offer cash discounts for prompt payments, and it is company policy to take all discounts. Most cash payments are made by check. Checks are most frequently issued to suppliers, to trucking companies for freight on merchandise purchases, and to newspapers, radio, and TV stations for advertising. All advertising bills are paid as received. Jack and Andrea each make a monthly drawing in cash for personal living expenses. The salaried repairman is paid twice monthly. Ermler & Trump currently has a manual accounting system.

### Instructions

With the class divided into groups, answer the following.

**a.** Identify the special journals that Ermler & Trump should have in its manual accounting system. List the column headings appropriate for each of the special journals.

**b.** What control and subsidiary accounts should be included in Ermler & Trump's manual accounting system? Why?

### Communication Activity

**CT7.3** Jill Locey, a classmate, has a part-time bookkeeping job. She is concerned about the inefficiencies in journalizing and posting transactions. Ben Newell is the owner of the company where Jill works. In response to numerous complaints from Jill and others, Ben hired two additional bookkeepers a month ago. However, the inefficiencies have continued at an even higher rate. The accounting information system for the company has only a general journal and a general ledger. Ben refuses to install a computerized accounting system.

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### Instructions

Now that Jill is an expert in manual accounting information systems, she decides to send a letter to Ben Newell explaining (1) why the additional personnel did not help and (2) what changes should be made to improve the efficiency of the accounting department. Write the letter that you think Jill should send.

### All About You

**CT7.4** In this chapter, you learned about a basic manual accounting information system. Computerized accounting systems range from the very basic and inexpensive to the very elaborate and expensive. However, even the most sophisticated systems are based on the fundamental structures and relationships that you learned in this chapter.

### Instructions

Go to WileyPLUS and review the demonstration that is provided for the general ledger software package that is used with this textbook. Prepare a brief explanation of how the general ledger system works—that is, how it is used and what information it provides.

## A Look at IFRS

**LEARNING OBJECTIVE 4**

Compare accounting information systems under GAAP and IFRS.

As discussed in Chapter 1, IFRS is growing in acceptance around the world. For example, recent statistics indicate a substantial number of the Global Fortune 500 companies use IFRS. And the chairman of the IASB predicts that IFRS adoption will grow from its current level of 115 countries to nearly 150 countries in the near future.

When countries accept IFRS for use as accepted accounting policies, companies need guidance to ensure that their first IFRS financial statements contain high-quality information. Specifically, *IFRS 1* requires that information in a company's first IFRS statements (1) be transparent, (2) provide a suitable starting point, and (3) have a cost that does not exceed the benefits.

### Key Points

Following are the key similarities and differences between GAAP and IFRS related to accounting information systems.

#### Similarities

- The basic concepts related to an accounting information system are the same under GAAP and IFRS.
- The use of subsidiary ledgers and control accounts, as well as the system used for recording transactions, are the same under GAAP and IFRS.

#### Differences

- Many companies will be going through a substantial conversion process to switch from their current reporting standards to IFRS.
- Upon first-time adoption of IFRS, a company must present at least one year of comparative information under IFRS.

### Looking to the Future

The basic recording process shown in this textbook is followed by companies around the globe. It is unlikely to change in the future. The definitional structure of assets, liabilities, equity, revenues, and expenses may change over time as the IASB and FASB evaluate their overall conceptual framework for establishing accounting standards. In addition, high-quality international accounting requires both high-quality accounting standards and high-quality auditing. Similar to the convergence of GAAP and IFRS, there is a movement to improve international auditing standards.

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# Fraud, Internal Control, and Cash

## Chapter Preview

As the following Feature Story about recording cash sales at **Barriques** indicates, control of cash is important to ensure that fraud does not occur. Companies also need controls to safeguard other types of assets. For example, Barriques undoubtedly has controls to prevent the theft of food and supplies, and controls to prevent the theft of tableware and dishes from its kitchen.

In this chapter, we explain the essential features of an internal control system and how it prevents fraud. We also describe how those controls apply to a specific asset—cash. The applications include some controls with which you may be already familiar, such as the use of a bank.

## Feature Story

### Minding the Money in Madison

For many years, **Barriques** in Madison, Wisconsin, has been named the city's favorite coffeehouse. Barriques not only does a booming business in coffee but also has wonderful baked goods, delicious sandwiches, and a fine selection of wines.

"Our customer base ranges from college students to neighborhood residents as well as visitors to our capital city," says bookkeeper Kerry Stoppleworth, who joined the company shortly after it was founded in 1998. "We are unique because we have customers who come in early on their way to work for a cup of coffee and then will stop back after work to pick up a bottle of wine for dinner. We stay very busy throughout all three parts of the day."

Like most businesses where purchases are low-cost and high-volume, cash control has to be simple. "We use a computerized point-of-sale (POS) system to keep track of our inventory and allow us to efficiently ring through an order for a customer," explains Stoppleworth. "You can either scan

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a barcode for an item or enter in a code for items that don't have a barcode such as cups of coffee or bakery items." The POS system also automatically tracks sales by department and maintains an electronic journal of all the sales transactions that occur during the day.

"There are two POS stations at each store, and throughout the day any of the staff may operate them," says Stoppleworth. At the end of the day, each POS station is reconciled separately. The staff counts the cash in the drawer and enters this amount into the closing totals in the POS system. The POS system then compares the cash and credit amounts, less the cash being carried forward to the next day (the float), to the shift total in the electronic journal. If there are discrepancies, a recount is done and the journal is reviewed transaction by transaction to identify the problem. The staff then creates a deposit ticket for the cash less the float and puts this in a drop safe with the electronic journal summary report for the manager to review and take to the bank the next day. Ultimately, the bookkeeper reviews all of these documents as well as the deposit receipt that the bank produces to make sure they are all in agreement.

As Stoppleworth concludes, "We keep the closing process and accounting simple so that our staff can concentrate on taking care of our customers and making great coffee and food."

# Chapter Outline

## LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Define fraud and the principles of internal control. | • Fraud<br>• The Sarbanes-Oxley Act<br>• Internal control<br>• Principles of internal control activities<br>• Limitations of internal control | **DO IT! 1** Control Activities |
| **LO 2** Apply internal control principles to cash. | • Cash receipts controls<br>• Cash disbursements controls<br>• Petty cash fund | **DO IT! 2a** Control over Cash Receipts<br>**DO IT! 2b** Petty Cash Fund |
| **LO 3** Identify the control features of a bank account. | • Making bank deposits<br>• Writing checks<br>• EFT system<br>• Bank statements<br>• Reconciling the bank account | **DO IT! 3** Bank Reconciliation |
| **LO 4** Explain the reporting of cash. | • Cash equivalents<br>• Restricted cash | **DO IT! 4** Reporting Cash |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

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# Fraud and Internal Control

**LEARNING OBJECTIVE 1**

Define fraud and the principles of internal control.

The Feature Story describes many of the internal control procedures used by **Barriques**. These procedures are necessary to discourage employees from fraudulent activities.

## Fraud

A **fraud** is a dishonest act by an employee that results in personal benefit to the employee at a cost to the employer. Examples of fraud reported in the financial press include the following.

- A bookkeeper in a small company diverted $750,000 of bill payments to a personal bank account over a three-year period.
- A shipping clerk with 28 years of service shipped $125,000 of merchandise to himself.
- A computer operator embezzled $21 million from **Wells Fargo Bank** over a two-year period.
- A church treasurer "borrowed" $150,000 of church funds to finance a friend's business dealings.

Why does fraud occur? The three main factors that contribute to fraudulent activity are depicted by the **fraud triangle** in **Illustration 8.1**.

The most important element of the fraud triangle is **opportunity**. For an employee to commit fraud, the workplace environment must provide opportunities that an employee can take advantage of. Opportunities occur when the workplace lacks sufficient controls to deter and detect fraud. For example, inadequate monitoring of employee actions can create opportunities for theft and can embolden employees because they believe they will not be caught.

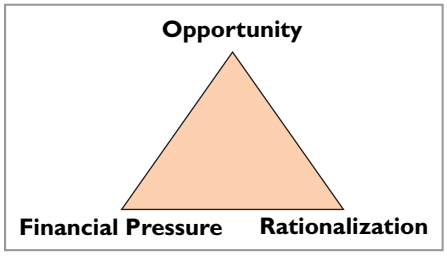


**ILLUSTRATION 8.1** Fraud triangle

A second factor that contributes to fraud is **financial pressure**. Employees sometimes commit fraud because of personal financial problems caused by too much debt. Or, they might commit fraud because they want to lead a lifestyle that they cannot afford on their current salary.

The third factor that contributes to fraud is **rationalization**. In order to justify their fraud, employees rationalize their dishonest actions. For example, employees sometimes justify fraud because they believe they are underpaid while the employer is making lots of money. Employees feel justified in stealing because they believe they deserve to be paid more.

## The Sarbanes-Oxley Act

What can be done to prevent or to detect fraud? After numerous corporate scandals came to light in the early 2000s, Congress addressed this issue by passing the **Sarbanes-Oxley Act (SOX)**. Under SOX, all publicly traded U.S. corporations are required to maintain an adequate system of internal control. Corporate executives and boards of directors must ensure that these controls are reliable and effective. In addition, independent outside auditors must attest to the adequacy of the internal control system. Companies that fail to comply are subject to fines, and company officers can be imprisoned. SOX also created the Public Company Accounting Oversight Board (PCAOB) to establish auditing standards and regulate auditor activity.

One poll found that 60% of investors believe that SOX helps safeguard their stock investments. Many say they would be unlikely to invest in a company that fails to follow SOX requirements. Although some corporate executives have criticized the time and expense involved in following SOX requirements, SOX appears to be working well. For example, the

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chief accounting officer of **Eli Lily** noted that SOX triggered a comprehensive review of how the company documents its controls. This review uncovered redundancies and pointed out controls that needed to be added. In short, it added up to time and money well spent.

## Internal Control

**Internal control** is a process designed to provide reasonable assurance regarding the achievement of company objectives related to operations, reporting, and compliance. In more detail, the purposes of internal control are to safeguard assets, enhance the reliability of accounting records, increase efficiency of operations, and ensure compliance with laws and regulations. Internal control systems have five primary components as listed below.[1]

- **A control environment.** It is the responsibility of top management to make it clear that the organization values integrity and that unethical activity will not be tolerated. This component is often referred to as the "tone at the top."
- **Risk assessment.** Companies must identify and analyze the various factors that create risk for the business and must determine how to manage these risks.
- **Control activities.** To reduce the occurrence of fraud, management must design policies and procedures to address the specific risks faced by the company.
- **Information and communication.** The internal control system must capture and communicate all pertinent information both down and up the organization, as well as communicate information to appropriate external parties.
- **Monitoring.** Internal control systems must be monitored periodically for their adequacy. Significant deficiencies need to be reported to top management and/or the board of directors.

### People, Planet, and Profit Insight

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#### And the Controls Are . . .

Internal controls are important for an effective financial reporting system. The same is true for sustainability reporting. An effective system of internal controls for sustainability reporting will help in the following ways: (1) prevent the unauthorized use of data; (2) provide reasonable assurance that the information is accurate, valid, and complete; and (3) report information that is consistent with overall sustainability accounting policies. With these types of controls, users will have the confidence that they can use the sustainability information effectively.

Some regulators are calling for even more assurance through audits of this information. Companies that potentially can cause environmental damage through greenhouse gases, as well as companies in the mining and extractive industries, are subject to reporting requirements. And, as demand for more information in the sustainability area expands, the need for audits of this information will grow.

**Why is sustainability information important to investors? (Go to WileyPLUS for this answer and additional questions.)**

## Principles of Internal Control Activities

Each of the five components of an internal control system is important. Here, we will focus on one component, the control activities. The reason? These activities are the backbone of the company's efforts to address the risks it faces, such as fraud. The specific control activities used by a company will vary, depending on management's assessment of the risks faced. This assessment is heavily influenced by the size and nature of the company.

[1]The Committee of Sponsoring Organizations of the Treadway Commission, "Internal Control—Integrated Framework," *www.coso.org/documents/990025P_executive_summary_final_May20_e.pdf*; and Stephan J. McNally, "The 2013 COSO Framework and SOX Compliance," *Strategic Finance* (June 2013).

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The six principles of control activities are as follows.

- Establishment of responsibility
- Segregation of duties
- Documentation procedures
- Physical controls
- Independent internal verification
- Human resource controls

We explain these principles in the following sections. You should recognize that they apply to most companies and are relevant to both manual and computerized accounting systems.

## Establishment of Responsibility

An essential principle of internal control is to assign responsibility to specific employees. **Control is most effective when only one person is responsible for a given task.**

To illustrate, assume that the cash on hand at the end of the day in a **Safeway** supermarket is $10 short of the cash entered in the cash register. If only one person has operated the register, the shift manager can quickly determine responsibility for the shortage. If two or more individuals have worked the register, it may be impossible to determine who is responsible for the error.

Many retailers solve this problem by having registers with multiple drawers. This makes it possible for more than one person to operate a register but still allows identification of a particular employee with a specific drawer. Only the signed-in cashier has access to his or her drawer.

Establishing responsibility often requires limiting access only to authorized personnel, and then identifying those personnel. For example, the automated systems used by many companies have mechanisms such as identifying passcodes that keep track of who made a journal entry, who entered a sale, or who went into an inventory storeroom at a particular time. Use of identifying passcodes enables the company to establish responsibility by identifying the particular employee who carried out the activity.

Transfer of cash drawers

### Anatomy of a Fraud

Maureen Frugali was a training supervisor for claims processing at Colossal Healthcare. As a standard part of the claims-processing training program, Maureen created fictitious claims for use by trainees. These fictitious claims were then sent to the accounts payable department. After the training claims had been processed, she was to notify Accounts Payable of all fictitious claims, so that they would not be paid. However, she did not inform Accounts Payable about every fictitious claim. She created some fictitious claims for entities that she controlled (that is, she would receive the payment), and she let Accounts Payable pay her.

**Total take: $11 million**

**The Missing Control**

**Establishment of responsibility.** The healthcare company did not adequately restrict the responsibility for authorizing and approving claims transactions. The training supervisor should not have been authorized to create claims in the company's "live" system.

Source: Adapted from Wells, *Fraud Casebook* (2007), pp. 61–70.

## Segregation of Duties

Segregation of duties is indispensable in an internal control system. There are two common applications of this principle:

1. Different individuals should be responsible for related activities.
2. The responsibility for recordkeeping for an asset should be separate from the physical custody of that asset.

The rationale for segregation of duties is this: **The work of one employee should, without a duplication of effort, provide a reliable basis for evaluating the work of another employee.** For example, the personnel that design and program computerized systems should

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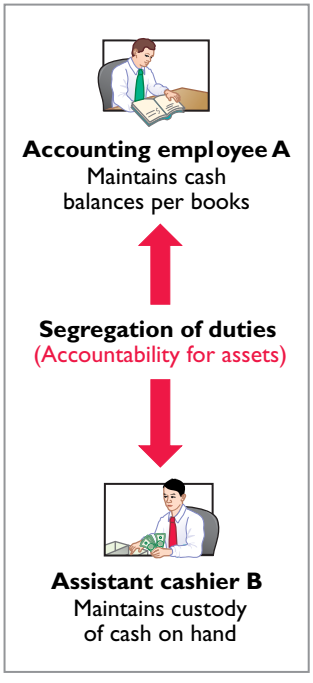
not be assigned duties related to day-to-day use of the system. Otherwise, they could design the system to benefit them personally and conceal the fraud through day-to-day use.

**Segregation of Related Activities.** **Making one individual responsible for related activities increases the potential for errors and irregularities.**

**Purchasing Activities.** Companies should, for example, assign related **purchasing activities** to different individuals. Related purchasing activities include ordering merchandise, approving orders, receiving goods, authorizing payment, and paying for goods or services. Various frauds are possible when one person handles related purchasing activities:

- If a purchasing agent is allowed to order goods without obtaining supervisory approval, the likelihood of the purchasing agent receiving kickbacks from suppliers increases.
- If an employee who orders goods also handles the invoice and receipt of the goods, as well as payment authorization, he or she might authorize payment for a fictitious invoice.

These abuses are less likely to occur when companies divide the purchasing tasks.




**Sales Activities.** Similarly, companies should assign related **sales activities** to different individuals. Related selling activities include making a sale, shipping (or delivering) the goods to the customer, billing the customer, and receiving payment. Various frauds are possible when one person handles related sales activities:

- If a salesperson can make a sale without obtaining supervisory approval, he or she might make sales at unauthorized prices to increase sales commissions.
- A shipping clerk who also has access to accounting records could ship goods to himself.
- A billing clerk who handles billing and receipt could understate the amount billed for sales made to friends and relatives.

These abuses are less likely to occur when companies divide the sales tasks. The salespeople make the sale, the shipping department ships the goods on the basis of the sales order, and the billing department prepares the sales invoice after comparing the sales order with the report of goods shipped.

## Anatomy of a Fraud

Lawrence Fairbanks, the assistant vice-chancellor of communications at Aesop University, was allowed to make purchases of under $2,500 for his department without external approval. Unfortunately, he also sometimes bought items for himself, such as expensive antiques and other collectibles. How did he do it? He replaced the vendor invoices he received with fake vendor invoices that he created. The fake invoices had descriptions that were more consistent with the communications department's purchases. He submitted these fake invoices to the accounting department as the basis for their journal entries and to the accounts payable department as the basis for payment.

### Total take: $475,000

#### The Missing Control

**Segregation of duties.** The university had not properly segregated related purchasing activities. Lawrence was ordering items, receiving the items, and receiving the invoice. By receiving the invoice, he had control over the documents that were used to account for the purchase and thus was able to substitute a fake invoice.

Source: Adapted from Wells, *Fraud Casebook* (2007), pp. 3–15.

**Segregation of Recordkeeping from Physical Custody.** The accountant should have neither physical custody of the asset nor access to it. Likewise, the custodian of the asset should not maintain or have access to the accounting records. **The custodian of the asset is not likely to convert the asset to personal use when one employee maintains the record of the asset, and a different employee has physical custody of the asset.** The separation of accounting responsibility from the custody of assets is especially important for cash and inventories because these assets are very vulnerable to fraud.

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## Anatomy of a Fraud

Angela Bauer was an accounts payable clerk for Aggasiz Construction Company. Angela prepared and issued checks to vendors and reconciled bank statements. She perpetrated a fraud in this way: She wrote checks for costs that the company had not actually incurred (e.g., fake taxes). A supervisor then approved and signed the checks. Before issuing the check, though, Angela would "white-out" the payee line on the check and change it to personal accounts that she controlled. She was able to conceal the theft because she also reconciled the bank account. That is, nobody else ever saw that the checks had been altered.

### Total take: $570,000

### The Missing Control

**Segregation of duties.** Aggasiz Construction Company did not properly segregate recordkeeping from physical custody. Angela had physical custody of the checks, which essentially was control of the cash. She also had recordkeeping responsibility because she prepared the bank reconciliation.

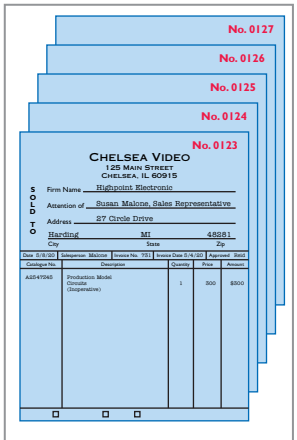
Source: Adapted from Wells, *Fraud Casebook* (2007), pp. 100–107.

## Documentation Procedures

Documents provide evidence that transactions and events have occurred. For example, point-of-sale terminals are networked with a company's computing and accounting records, which results in direct documentation.

Similarly, a shipping document indicates that the goods have been shipped, and a sales invoice indicates that the company has billed the customer for the goods. By requiring signatures (or initials) on the documents, the company can identify the individual(s) responsible for the transaction or event. Companies should document transactions when they occur.

Companies should establish procedures for documents. First, whenever possible, companies should use **prenumbered documents, and all documents should be accounted for**. Prenumbering helps to prevent a transaction from being recorded more than once, or conversely, from not being recorded at all. Second, the control system should require that employees **promptly forward source documents for accounting entries to the accounting department**. **This control measure helps to ensure timely recording of the transaction** and contributes directly to the accuracy and reliability of the accounting records.



Prenumbered invoices

## Anatomy of a Fraud

To support their reimbursement requests for travel costs incurred, employees at Mod Fashions Corporation's design center were required to submit receipts. The receipts could include the detailed bill provided for a meal, the credit card receipt provided when the credit card payment is made, or a copy of the employee's monthly credit card bill that listed the item. A number of the designers who frequently traveled together came up with a fraud scheme: They submitted claims for the same expenses. For example, if they had a meal together that cost $200, one person submitted the detailed meal bill, another submitted the credit card receipt, and a third submitted a monthly credit card bill showing the meal as a line item. Thus, all three received a $200 reimbursement.

### Total take: $75,000

### The Missing Control

**Documentation procedures.** Mod Fashions should require the original, detailed receipt. It should not accept photocopies, and it should not accept credit card statements. In addition, documentation procedures could be further improved by requiring the use of a corporate credit card (rather than a personal credit card) for all business expenses.

Source: Adapted from Wells, *Fraud Casebook* (2007), pp. 79–90.

## Physical Controls

Use of physical controls is essential. **Physical controls** relate to the safeguarding of assets and enhance the accuracy and reliability of the accounting records. **Illustration 8.2** shows examples of these controls.

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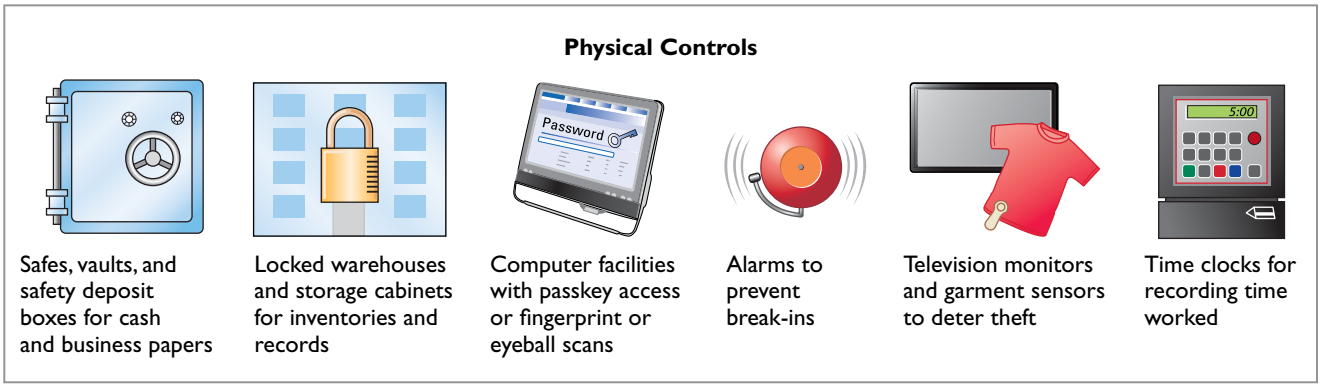
**ILLUSTRATION 8.2** **Physical controls**


Physical Controls
Password
5:00
Safes, vaults, and safety deposit boxes for cash and business papers
Locked warehouses and storage cabinets for inventories and records
Computer facilities with passkey access or fingerprint or eyeball scans
Alarms to prevent break-ins
Television monitors and garment sensors to deter theft
Time clocks for recording time worked

## Anatomy of a Fraud

At Centerstone Health, a large insurance company, the mailroom each day received insurance applications from prospective customers. Mailroom employees scanned the applications into electronic documents before the applications were processed. Once the applications were scanned, they could be accessed online by authorized employees.

Insurance agents at Centerstone Health earn commissions based upon successful applications. The sales agent's name is listed on the application. However, roughly 15% of the applications are from customers who did not work with a sales agent. Two friends—Alex, an employee in recordkeeping, and Parviz, a sales agent—thought up a way to perpetrate a fraud. Alex identified scanned applications that did not list a sales agent. After business hours, he entered the mailroom and found the hard-copy applications that did not show a sales agent. He wrote in Parviz's name as the sales agent and then rescanned the application for processing. Parviz received the commission, which the friends then split.

### Total take: $240,000

### The Missing Control

**Physical controls.** Centerstone Health lacked two basic physical controls that could have prevented this fraud. First, the mailroom should have been locked during nonbusiness hours, and access during business hours should have been tightly controlled. Second, the scanned applications supposedly could be accessed only by authorized employees using their passwords. However, the password for each employee was the same as the employee's user ID. Since employee user-ID numbers were available to all other employees, all employees knew each other's passwords. Thus, Alex could enter the system using another employee's password and access the scanned applications.

Source: Adapted from Wells, *Fraud Casebook* (2007), pp. 316–326.

## Independent Internal Verification

Most internal control systems provide for **independent internal verification**. This principle involves the review of data prepared by employees. To obtain maximum benefit from independent internal verification:

1. Companies should verify records periodically or on a surprise basis.
2. An employee who is independent of the personnel responsible for the information should make the verification.
3. Discrepancies and exceptions should be reported to a management level that can take appropriate corrective action.

Independent internal verification is especially useful in comparing recorded accountability with existing assets. The reconciliation of the electronic journal with the cash in the point-of-sale terminal at **Barriques** is an example of this internal control principle. Other common examples are the reconciliation of a company's cash balance per books with the cash balance per bank, and the verification of the perpetual inventory records through a count of physical inventory. **Illustration 8.3** shows the relationship between this principle and the segregation of duties principle.

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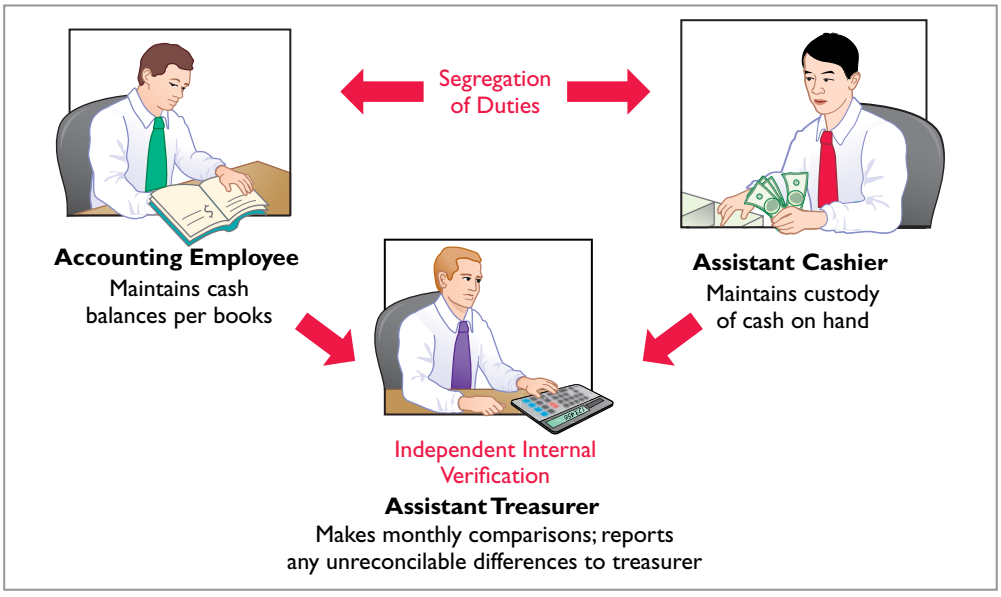
Segregation of Duties
Accounting Employee
Maintains cash balances per books
Assistant Cashier
Maintains custody of cash on hand
Independent Internal Verification
Assistant Treasurer
Makes monthly comparisons; reports any unreconcilable differences to treasurer

**ILLUSTRATION 8.3**
**Comparison of segregation of duties principle with independent internal verification principle**

## Anatomy of a Fraud

Bobbi Jean Donnelly, the office manager for Mod Fashions Corporation's design center, was responsible for preparing the design center budget and reviewing expense reports submitted by design center employees. Her desire to upgrade her wardrobe got the better of her, and she enacted a fraud that involved filing expense-reimbursement requests for her own personal clothing purchases. Bobbi Jean was able to conceal the fraud because she was responsible for reviewing all expense reports, including her own. In addition, she sometimes was given ultimate responsibility for signing off on the expense reports when her boss was "too busy." Also, because she controlled the budget, when she submitted her expenses, she coded them to budget items that she knew were running under budget, so that they would not catch anyone's attention.

### Total take: $275,000

### The Missing Control

**Independent internal verification.** Bobbi Jean's boss should have verified her expense reports. When asked what he thought her expenses for a year were, the boss said about $10,000. At $115,000 per year, her actual expenses were more than 10 times what would have been expected. However, because he was "too busy" to verify her expense reports or to review the budget, he never noticed.

Source: Adapted from Wells, *Fraud Casebook* (2007), pp. 79–90.

Large companies often assign independent internal verification to internal auditors. **Internal auditors** are company employees who continuously evaluate the effectiveness of the company's internal control systems. They review the activities of departments and individuals to determine whether prescribed internal controls are being followed. They also recommend improvements when needed. For example, **WorldCom** was at one time the second largest U.S. telecommunications company. The fraud that caused its bankruptcy (the largest ever when it occurred) involved billions of dollars. It was uncovered by an internal auditor.

## Human Resource Controls

Human resource control activities include the following.

1. **Bond employees who handle cash.** **Bonding** involves obtaining insurance protection against theft by employees. It contributes to the safeguarding of cash in two ways. First, the insurance company carefully screens all individuals before adding them to the policy and may reject risky applicants. Second, bonded employees know that the insurance company will vigorously prosecute all offenders.
2. **Rotate employees' duties and require employees to take vacations.** These measures deter employees from attempting thefts since they will not be able to permanently conceal their improper actions. Many banks, for example, have discovered employee thefts when the employee was on vacation or assigned to a new position.

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3. **Conduct thorough background checks.** Many believe that the most important and inexpensive measure any business can take to reduce employee theft and fraud is for the human resource department to conduct thorough background checks. Two tips: (1) Check to see whether job applicants actually graduated from the schools they list. (2) Never use telephone numbers for previous employers provided by the applicant. Always look them up yourself.

## Anatomy of a Fraud

Ellen Lowry was the desk manager and Josephine Rodriguez was the head of housekeeping at the Excelsior Inn, a luxury hotel. The two best friends were so dedicated to their jobs that they never took vacations, and they frequently filled in for other employees. In fact, Ms. Rodriguez, whose job as head of housekeeping did not include cleaning rooms, often cleaned rooms herself, "just to help the staff keep up." These two "dedicated" employees, working as a team, found a way to earn a little more cash. Ellen, the desk manager, provided significant discounts to guests who paid with cash. She kept the cash and did not register the guests in the hotel's computerized system. Instead, she took the room out of circulation "due to routine maintenance." Because the room did not show up as being used, it did not receive a normal housekeeping assignment. Instead, Josephine, the head of housekeeping, cleaned the rooms during the guests' stay.

### Total take: $95,000

#### The Missing Control

**Human resource controls.** Ellen, the desk manager, had been fired by a previous employer after being accused of fraud. If the Excelsior Inn had conducted a thorough background check, it would not have hired her. The hotel fraud was detected when Ellen missed work for a few days due to illness. A system of mandatory vacations and rotating days off would have increased the chances of detecting the fraud before it became so large.

Source: Adapted from Wells, *Fraud Casebook* (2007), pp. 145–155.

## Accounting Across the Organization

Stockbyte/Getty Images, Inc.

### SOX Boosts the Role of Human Resources

Under SOX, a company needs to keep track of employees' degrees and certifications to ensure that employees continue to meet the specified requirements of a job. Also, to ensure proper employee supervision and proper separation of duties, companies must develop and monitor an organizational chart. When one corporation went through this exercise, it found that out of 17,000 employees, there were 400 people who did not report to anyone. The corporation also had 35 people who reported to each other. In addition, if an employee complains of an unfair firing and mentions financial issues at the company, the human resource department must refer the case to the company audit committee and possibly to its legal counsel.

**Why would unsupervised employees or employees who report to each other represent potential internal control threats? (Go to WileyPLUS for this answer and additional questions.)**

# Limitations of Internal Control

**HELPFUL HINT**

**Controls may vary with the risk level of the activity. For example, management may consider cash to be high risk and maintaining inventories in the stockroom as low risk. Thus, management would have stricter controls for cash.**

Companies generally design their systems of internal control to provide **reasonable assurance** of proper safeguarding of assets and reliability of the accounting records. The concept of reasonable assurance rests on the premise that the costs of establishing control procedures should not exceed their expected benefit (see **Helpful Hint**).

To illustrate, consider shoplifting losses in retail stores. Stores could eliminate such losses by having a security guard stop and search customers as they leave the store. But store managers have concluded that the negative effects of such a procedure cannot be justified. Instead, they have attempted to control shoplifting losses by less costly procedures. They post signs saying, "We reserve the right to inspect all packages" and "All shoplifters will be prosecuted."

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They use hidden cameras and store detectives to monitor customer activity, and they install sensor equipment at exits.

The **human element** is an important factor in every system of internal control. A good system can become ineffective as a result of employee fatigue, carelessness, or indifference. For example, a receiving clerk may not bother to count goods received and may just "fudge" the counts. Occasionally, two or more individuals may work together to get around prescribed controls. Such **collusion** can significantly reduce the effectiveness of a system, eliminating the protection offered by segregation of duties. No system of internal control is perfect.

The **size of the business** also may impose limitations on internal control. Small companies often find it difficult to segregate duties or to provide for independent internal verification. A study by the Association of Certified Fraud Examiners (*2014 Report to the Nation on Occupational Fraud and Abuse*) indicates that businesses with fewer than 100 employees are most at risk for employee theft. In fact, 29% of frauds occurred at companies with fewer than 100 employees. The median loss at small companies was $154,000, which was nearly as high as the median fraud at companies with more than 10,000 employees ($160,000). A $154,000 loss can threaten the very existence of a small company.

### DO IT! 1 | Control Activities

Identify which control activity is violated in each of the following situations, and explain how the situation creates an opportunity for a fraud.

1. The person with primary responsibility for reconciling the bank account and making all bank deposits is also the company's accountant.
2. Wellstone Company's treasurer received an award for distinguished service because he had not taken a vacation in 30 years.
3. In order to save money spent on order slips and to reduce time spent keeping track of order slips, a local bar/restaurant does not buy prenumbered order slips.

**ACTION PLAN**

- Familiarize yourself with each of the control activities.
- Understand the nature of the frauds that each control activity is intended to address.

**Solution**

1. Violates the control activity of segregation of duties. Recordkeeping should be separate from physical custody. As a consequence, the employee could embezzle cash and make journal entries to hide the theft.
2. Violates the control activity of human resource controls. Key employees must take vacations. Otherwise, the treasurer, who manages the company's cash, might embezzle cash and use his position to conceal the theft.
3. Violates the control activity of documentation procedures. If prenumbered documents are not used, then it is virtually impossible to account for the documents. As a consequence, an employee could write up a dinner sale, receive the cash from the customer, and then throw away the order slip and keep the cash.

Related exercise material: **BE8.1, BE8.2, BE8.3, BE8.4, DO IT! 8.1, E8.1, E8.2, E8.3, E8.5, and E8.6.**

## Cash Controls

**LEARNING OBJECTIVE 2**

Apply internal control principles to cash.

Cash is the one asset that is readily convertible into any other type of asset. It also is easily concealed and transported, and is highly desired. Because of these characteristics, **cash is the asset most susceptible to fraudulent activities**. In addition, because of the large volume of

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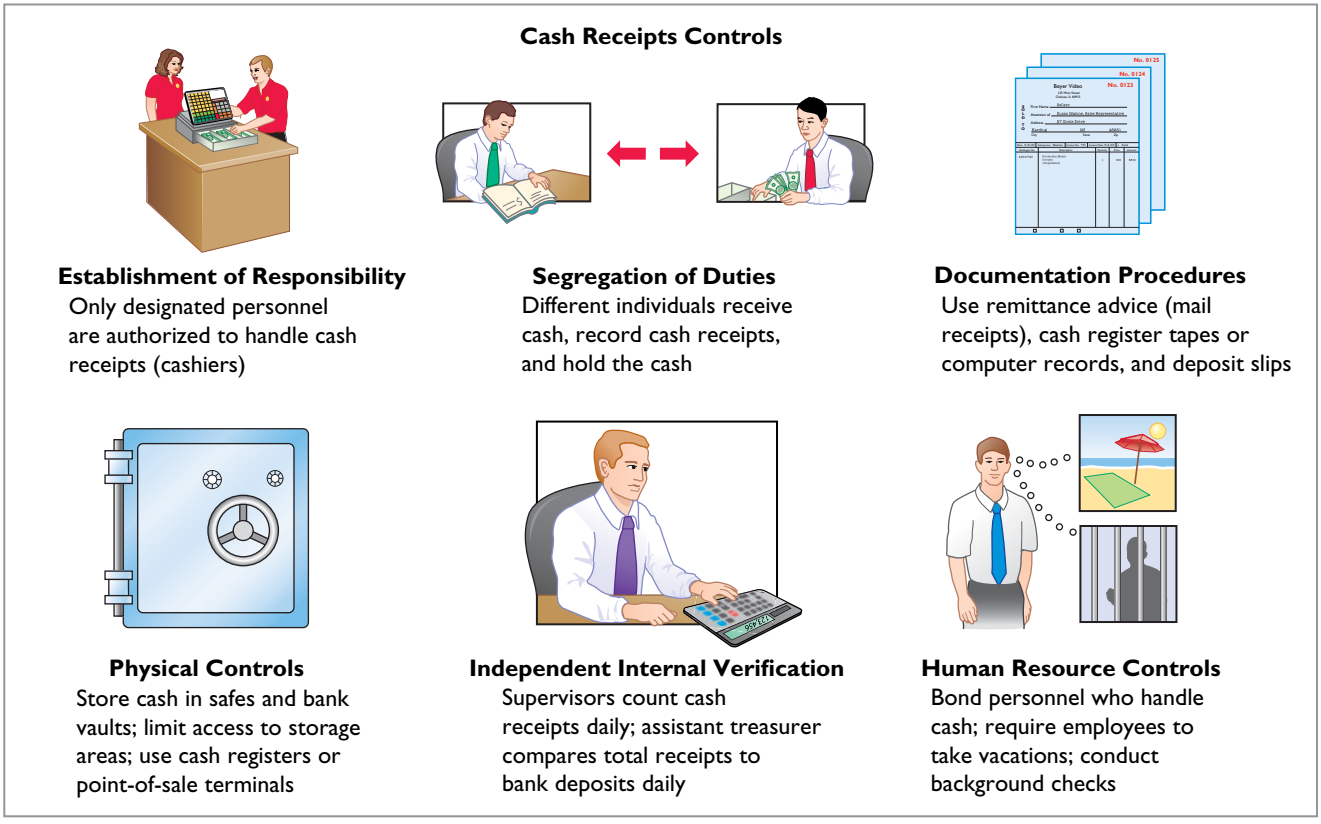
cash transactions, numerous errors may occur in executing and recording them. To safeguard cash and to ensure the accuracy of the accounting records for cash, effective internal control over cash is critical.

## Cash Receipts Controls

**Illustration 8.4** shows how the internal control principles explained earlier apply to cash receipts transactions. As you might expect, companies vary considerably in how they apply these principles. To illustrate internal control over cash receipts, we will examine control activities for a retail store with both over-the-counter and mail receipts.

**ILLUSTRATION 8.4** **Application of internal control principles to cash receipts**


Cash Receipts Controls
Establishment of Responsibility
Only designated personnel are authorized to handle cash receipts (cashiers)
Segregation of Duties
Different individuals receive cash, record cash receipts, and hold the cash
Documentation Procedures
Use remittance advice (mail receipts), cash register tapes or computer records, and deposit slips
Physical Controls
Store cash in safes and bank vaults; limit access to storage areas; use cash registers or point-of-sale terminals
Independent Internal Verification
Supervisors count cash receipts daily; assistant treasurer compares total receipts to bank deposits daily
Human Resource Controls
Bond personnel who handle cash; require employees to take vacations; conduct background checks

### Over-the-Counter Receipts

In retail businesses, control of over-the-counter receipts centers on cash registers that are visible to customers. A cash sale is entered in a cash register (or point-of-sale terminal), with the amount clearly visible to the customer. This activity prevents the sales clerk from entering a lower amount and pocketing the difference. The customer receives an itemized cash register receipt and is expected to count the change received. (One weakness at **Barriques** in the Feature Story is that customers are only given a receipt if requested.) The cash register's tape is locked in the register until a supervisor removes it. This tape accumulates the daily transactions and totals.

At the end of the clerk's shift, the clerk counts the cash and sends the cash and the count to the cashier. The cashier counts the cash, prepares a deposit slip, and deposits the cash at the bank. The cashier also sends a duplicate of the deposit slip to the accounting department to indicate cash received. The supervisor removes the cash register tape and sends it to the accounting department as the basis for a journal entry to record the cash received.

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(For point-of-sale systems, the accounting department receives information on daily transactions and totals through the computer network.) **Illustration 8.5** summarizes this process (see **Helpful Hint**).

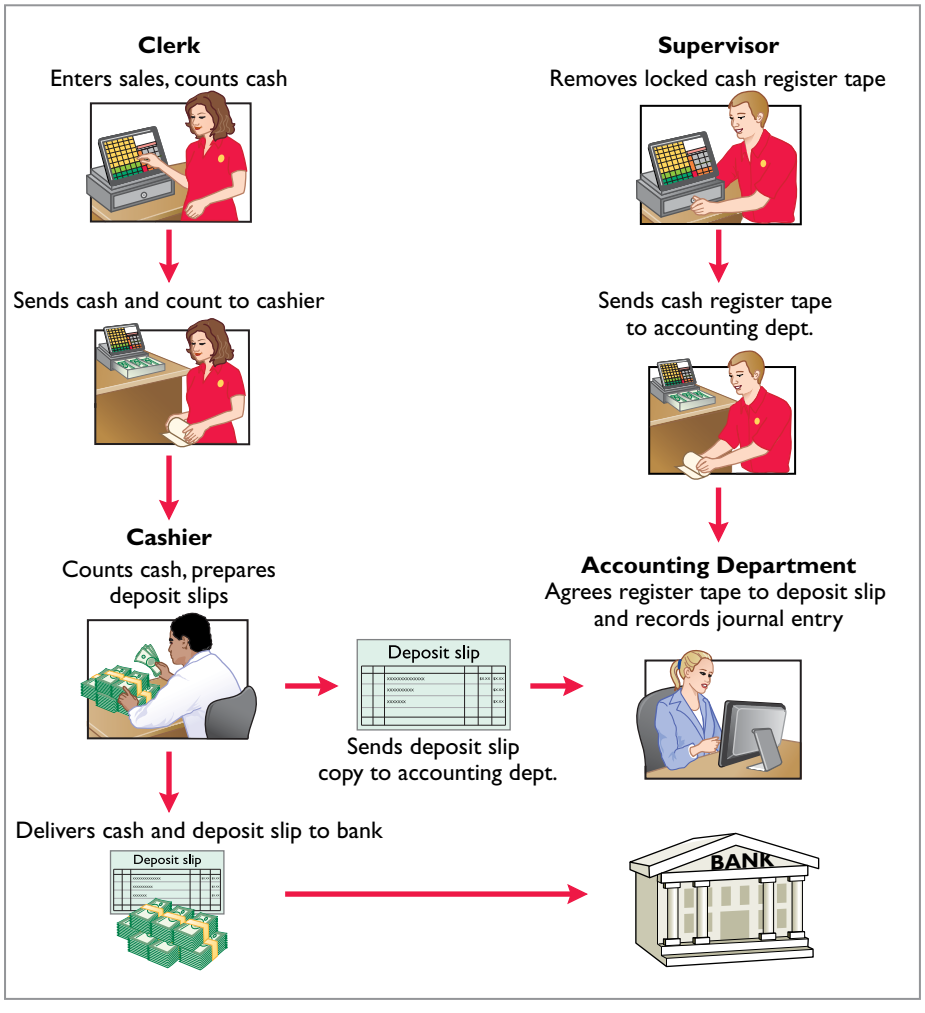
Clerk
Enters sales, counts cash
Supervisor
Removes locked cash register tape
Sends cash and count to cashier
Sends cash register tape to accounting dept.
Cashier
Counts cash, prepares deposit slips
Accounting Department
Agrees register tape to deposit slip and records journal entry
Deposit slip
Sends deposit slip copy to accounting dept.
Delivers cash and deposit slip to bank
Deposit slip
BANK

**ILLUSTRATION 8.5**
**Control of over-the-counter receipts**

**HELPFUL HINT**
**Flowcharts such as this one enhance the understanding of the flow of documents, the processing steps, and the internal control procedures.**

This system for handling cash receipts uses an important internal control principle—segregation of recordkeeping from physical custody. The supervisor has access to the cash register tape but **not** to the cash. The clerk and the cashier have access to the cash but **not** to the register tape. In addition, the cash register tape provides documentation and enables independent internal verification. Use of these three principles of internal control (segregation of recordkeeping from physical custody, documentation, and independent internal verification) provides an effective system of internal control. Any attempt at fraudulent activity should be detected unless there is collusion among the employees.

In some instances, the amount deposited at the bank will not agree with the cash recorded in the accounting records based on the cash register tape. These differences often result because the clerk hands incorrect change back to the retail customer. In this case, the difference between the actual cash and the amount reported on the cash register tape is reported in a Cash Over and Short account. For example, suppose that the cash register tape indicated sales of $6,956.20 but the amount of cash was only $6,946.10. A cash shortfall of $10.10 exists. To account for this cash shortfall and related cash, the company makes the following entry.

| | | | |
|---|---|---|---|
| Cash | 6,946.10 | | |
| Cash Over and Short | 10.10 | | |
| Sales Revenue | | | 6,956.20 |
| (To record cash shortfall) | | | |

A = L + OE
+6,946.10
−10.10
+6,956.20

**Cash Flows**
+6,946.10

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Cash Over and Short is an income statement item. It is reported as miscellaneous expense when there is a cash shortfall, and as miscellaneous revenue when there is an overage. Clearly, the amount should be small. Any material amounts in this account should be investigated.

### Mail Receipts

All mail receipts should be opened in the presence of at least two mail clerks. These receipts are generally in the form of checks. A mail clerk should endorse each check "For Deposit Only." This restrictive endorsement reduces the likelihood that someone could divert the check to personal use. Banks will not give an individual cash when presented with a check that has this type of endorsement.

The mail clerks prepare, in triplicate, a list of the checks received each day. This list shows the name of the check issuer, the purpose of the payment, and the amount of the check. Each mail clerk signs the list to establish responsibility for the data. The original copy of the list, along with the checks, is then sent to the cashier's department. A copy of the list is sent to the accounting department for recording in the accounting records. The clerks also keep a copy.

This process provides excellent internal control for the company. By employing two clerks, the chance of fraud is reduced. Each clerk knows he or she is being observed by the other clerk(s). To engage in fraud, they would have to collude. The customers who submit payments also provide control because they will contact the company with a complaint if they are not properly credited for payment. Because the cashier has access to cash but not the records, and the accounting department has access to records but not cash, neither can engage in undetected fraud.

### DO IT! 2a | Control over Cash Receipts

L. R. Cortez is concerned about the control over cash receipts in his fast-food restaurant, Big Cheese. The restaurant has two cash registers. At no time do more than two employees take customer orders and enter sales. Work shifts for employees range from 4 to 8 hours. Cortez asks your help in installing a good system of internal control over cash receipts.

**ACTION PLAN**

- **Differentiate among the internal control principles of (1) establishing responsibility, (2) using physical controls, and (3) independent internal verification.**
- **Design an effective system of internal control over cash receipts.**

#### Solution

Cortez should assign a separate cash register drawer to each employee at the start of each work shift, with register totals set at zero. Each employee should have access to only the assigned register drawer to enter all sales. Each customer should be given a receipt. At the end of the shift, the employee should do a cash count. A separate employee should compare the cash count with the register tape (or point-of-sale records) to be sure they agree. In addition, Cortez should install an automated point-of-sale system that would enable the company to compare orders entered in the register to orders processed by the kitchen.

Related exercise material: **BE8.5, BE8.6, BE8.7, BE8.8, DO IT! 8.2a, E8.2, and E8.3.**

## Cash Disbursements Controls

Companies disburse cash for a variety of reasons, such as to pay expenses and liabilities or to purchase assets. **Generally, internal control over cash disbursements is more effective when companies pay by check or electronic funds transfer (EFT) rather than by cash.** One exception is **payments for incidental amounts that are paid out of petty cash**.[2]

[2]We explain the operation of a petty cash fund in the next section.

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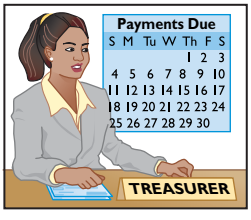
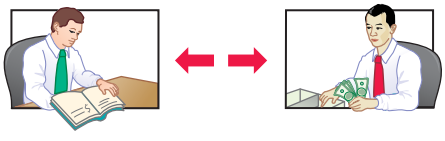
Companies generally issue checks only after following specified control procedures. **Illustration 8.6** shows how principles of internal control apply to cash disbursements.

**ILLUSTRATION 8.6** **Application of internal control principles to cash disbursements**

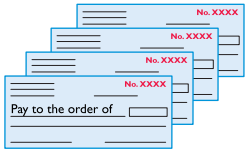
**Cash Disbursements Controls**



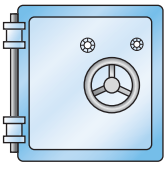

**Establishment of Responsibility**
Only designated personnel are authorized to sign checks (treasurer) and approve vendors



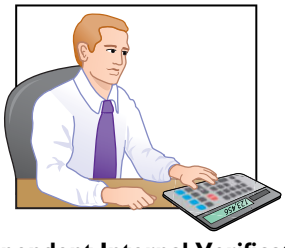
**Segregation of Duties**
Different individuals approve and make payments; check-signers do not record disbursements



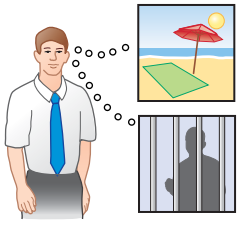

**Documentation Procedures**
Use prenumbered checks and account for them in sequence; each check must have an approved invoice; require employees to use corporate credit cards for reimbursable expenses; stamp invoices "paid"



**Physical Controls**
Store blank checks in safes, with limited access; print check amounts by machine in indelible ink



**Independent Internal Verification**
Compare checks to invoices; reconcile bank statement monthly



**Human Resource Controls**
Bond personnel who handle cash; require employees to take vacations; conduct background checks

## Voucher System Controls

Most medium and large companies use vouchers as part of their internal control over cash disbursements. A **voucher system** is a network of approvals by authorized individuals, acting independently, to ensure that all disbursements by check are proper.

The system begins with the authorization to incur a cost or expense. It ends with the issuance of a check for the liability incurred. A **voucher** is an authorization form prepared for each expenditure. Companies require vouchers for all types of cash disbursements except those from petty cash.

The starting point in preparing a voucher is to fill in the appropriate information about the liability on the face of the voucher. The vendor's invoice provides most of the needed information. Then, an employee in accounts payable records the voucher (in a journal called a **voucher register**) and files it according to the date on which it is to be paid. The company issues and sends a check on that date, and stamps the voucher "paid." The paid voucher is sent to the accounting department for recording (in a journal called the **check register**). A voucher

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system involves two journal entries, one to record the liability when the voucher is issued and a second to pay the liability that relates to the voucher.

The use of a voucher system, whether done manually or electronically, improves internal control over cash disbursements. First, the authorization process inherent in a voucher system establishes responsibility. Each individual has responsibility to review the underlying documentation to ensure that it is correct. In addition, the voucher system keeps track of the documents that back up each transaction. By keeping these documents in one place, a supervisor can independently verify the authenticity of each transaction. Consider, for example, the case of Aesop University presented in the "Anatomy of a Fraud" box earlier in the chapter. Aesop did not use a voucher system for transactions under $2,500. As a consequence, there was no independent verification of the documents, which enabled the employee to submit fake invoices to hide his unauthorized purchases.

# Petty Cash Fund

As you just learned, better internal control over cash disbursements is possible when companies make payments by check. However, using checks to pay small amounts is both impractical and a nuisance. For instance, a company would not want to write checks to pay for postage due, working lunches, or taxi fares. A common way of handling such payments, while maintaining satisfactory control, is to use a **petty cash fund** to pay relatively small amounts (see **Ethics Note**). The operation of a petty cash fund, often called an **imprest system**, involves (1) establishing the fund, (2) making payments from the fund, and (3) replenishing the fund.[3]

**ETHICS NOTE**

**Petty cash funds are authorized and legitimate. In contrast, "slush" funds are unauthorized and hidden (under the table).**

## Establishing the Petty Cash Fund

Two essential steps in establishing a petty cash fund are (1) appointing a petty cash custodian who will be responsible for the fund, and (2) determining the size of the fund. Ordinarily, a company expects the amount in the fund to cover anticipated disbursements for a three- to four-week period.

To establish the fund, a company issues a check payable to the petty cash custodian for the stipulated amount. For example, if Laird Company decides to establish a $100 fund on March 1, the general journal entry is as follows.

| A | = | L | + | OE |
|---|---|---|---|---|
| +100 | | | | |
| −100 | | | | |

**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| Mar. 1 | Petty Cash | 100 | |
| | Cash | | 100 |
| | (To establish a petty cash fund) | | |

The fund custodian cashes the check and places the proceeds in a locked petty cash box or drawer. Most petty cash funds are established on a fixed-amount basis. The company will make no additional entries to the Petty Cash account unless management changes the stipulated amount of the fund. For example, if Laird decides on July 1 to increase the size of the fund to $250, it would debit Petty Cash $150 and credit Cash $150.

## Making Payments from the Petty Cash Fund

The petty cash custodian has the authority to make payments from the fund that conform to prescribed management policies. Usually, management limits the size of expenditures that come from petty cash. Likewise, it may not permit use of the fund for certain types of transactions (such as making short-term loans to employees).

Each payment from the fund must be documented on a prenumbered petty cash receipt (or petty cash voucher), as shown in **Illustration 8.7** (see **Helpful Hint**). The signatures of both the fund custodian and the person receiving payment are required on the receipt. If other supporting documents such as a freight bill or invoice are available, they should be attached to the petty cash receipt.

**HELPFUL HINT**

**The petty cash receipt satisfies two internal control principles: (1) establishment of responsibility (signature of custodian), and (2) documentation procedures.**

[3]The term "imprest" means an advance of money for a designated purpose.

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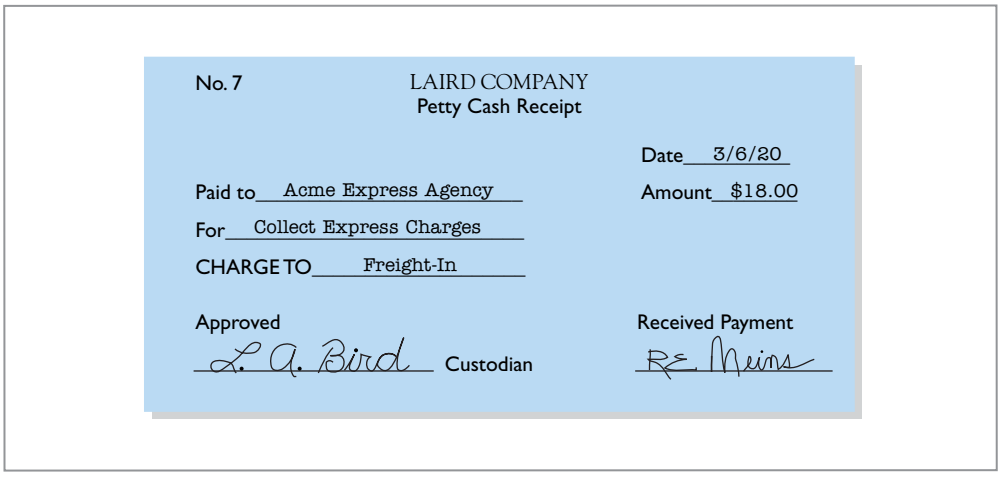
**ILLUSTRATION 8.7**
**Petty cash receipt**


No. 7 LAIRD COMPANY
Petty Cash Receipt

Date 3/6/20
Paid to Acme Express Agency
Amount $18.00
For Collect Express Charges
CHARGE TO Freight-In

Approved
L. A. Bird Custodian
Received Payment
R. E. Mains

The petty cash custodian keeps the receipts in the petty cash box until the fund is replenished. The sum of the petty cash receipts and the money in the fund should equal the established total at all times. Management can (and should) make surprise counts at any time (or use an independent person, such as an internal auditor) to determine the correctness of the fund.

The company does not make an accounting entry to record a payment when it is made from petty cash. It is considered both inexpedient and unnecessary to do so. Instead, the company recognizes the accounting effects of each payment when it replenishes the fund.

## Replenishing the Petty Cash Fund

When the money in the petty cash fund reaches a minimum level, the company replenishes the fund (see **Helpful Hint**). The petty cash custodian initiates a request for reimbursement. The individual prepares a schedule (or summary) of the payments that have been made and sends the schedule, supported by petty cash receipts and other documentation, to the treasurer's office. The treasurer's office examines the receipts and supporting documents to verify that proper payments from the fund were made. The treasurer then approves the request and issues a check to restore the fund to its established amount. At the same time, all supporting documentation is stamped "paid" so that it cannot be submitted again for payment.

To illustrate, assume that on March 15 Laird's petty cash custodian requests a check for $87. The fund contains $13 cash and petty cash receipts for postage $44, freight-out $38, and miscellaneous expenses $5. The general journal entry to record the check is as follows.

| | | | |
|---|---|---|---|
| Mar. 15 | Postage Expense | 44 | |
| | Freight-Out | 38 | |
| | Miscellaneous Expense | 5 | |
| | Cash | | 87 |
| | (To replenish petty cash fund) | | |

**HELPFUL HINT**
**Replenishing the petty cash fund involves three internal control procedures:**
1. **segregation of duties,**
2. **documentation procedures, and**
3. **independent internal verification.**

A = L + OE
−44 Exp.
−38 Exp.
−87 −5 Exp.
**Cash Flows**
−87

Note that the reimbursement entry does not affect the Petty Cash account. Replenishment changes the composition of the fund by replacing the petty cash receipts with cash. It does not change the balance in the fund.

Occasionally, in replenishing a petty cash fund, the company may need to recognize a cash shortage or overage (see **Helpful Hint**). This results when the total of the cash plus receipts in the petty cash box does not equal the established amount of the petty cash fund. To illustrate, assume that Laird's petty cash custodian has only $12 in cash in the fund plus the receipts as listed. The request for reimbursement would therefore be for $88, and Laird would make the following entry.

| | | | |
|---|---|---|---|
| Mar. 15 | Postage Expense | 44 | |
| | Freight-Out | 38 | |
| | Miscellaneous Expense | 5 | |
| | Cash Over and Short | 1 | |
| | Cash | | 88 |
| | (To replenish petty cash fund) | | |

**HELPFUL HINT**
**Cash over and short situations result from mathematical errors or from failure to keep accurate records.**

A = L + OE
−44 Exp
−38 Exp
−5 Exp
−1 Exp
−88
**Cash Flows**
−88

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Conversely, if the custodian has $14 in cash, the reimbursement request would be for $86. The company would credit Cash Over and Short for $1 (overage). A company reports a debit balance in Cash Over and Short in the income statement as miscellaneous expense. It reports a credit balance in the account as miscellaneous revenue. The company closes Cash Over and Short to Income Summary at the end of the year.

Companies should replenish a petty cash fund **at the end of the accounting period, regardless of the cash in the fund**. Replenishment at this time is necessary in order to recognize the effects of the petty cash payments on the financial statements.

Internal control over a petty cash fund is strengthened by (1) having a supervisor make surprise counts of the fund to ascertain whether the paid petty cash receipts and fund cash equal the designated amount, and (2) cancelling or mutilating the paid petty cash receipts so they cannot be resubmitted for reimbursement.

## Ethics Insight

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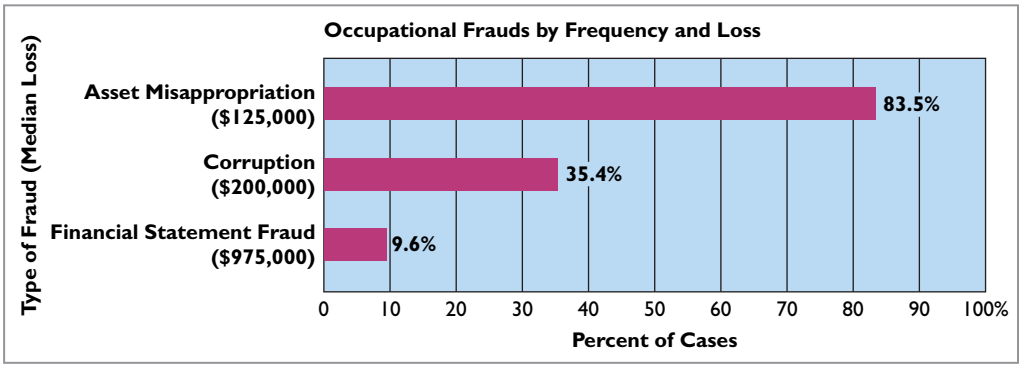
### How Employees Steal

Occupational fraud is using your own occupation for personal gain through the misuse or misapplication of the company's resources or assets. This type of fraud is one of three types:

1. **Asset misappropriation**, such as theft of cash on hand, fraudulent disbursements, false refunds, ghost employees, personal purchases, and fictitious employees. This fraud is the most common but the least costly.
2. **Corruption**, such as bribery, illegal gratuities, and economic extortion. This fraud generally falls in the middle between asset misappropriation and financial statement fraud as regards frequency and cost.
3. **Financial statement fraud**, such as fictitious revenues, concealed liabilities and expenses, improper disclosures, and improper asset values. This fraud occurs less frequently than other types of fraud but it is the most costly.

The graph below shows the frequency and the median loss for each type of occupational fraud. (Note that the sum of percentages exceeds 100% because some cases of fraud involved more than one type.)




**Source:** *2016 Report to the Nations on Occupational Fraud and Abuse*, Association of Certified Fraud Examiners, pp. 10–12.

**How can companies reduce the likelihood of occupational fraud? (Go to WileyPLUS for this answer and additional questions.)**

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### DO IT! 2b | Petty Cash Fund

Bateer Company established a $50 petty cash fund on July 1. On July 30, the fund had $12 cash remaining and petty cash receipts for postage $14, office supplies $10, and delivery expense $15. Prepare journal entries to establish the fund on July 1 and to replenish the fund on July 30.

**Solution**

| | | | |
|---|---|---|---|
| July 1 | Petty Cash | 50 | |
| | Cash | | 50 |
| | (To establish petty cash fund) | | |
| 30 | Postage Expense | 14 | |
| | Supplies | 10 | |
| | Delivery Expense | 15 | |
| | Cash Over and Short | | 1 |
| | Cash ($50 − $12) | | 38 |
| | (To replenish petty cash) | | |

Related exercise material: **BE8.9, DO IT! 8.2b, E8.7 and E8.8.**

**ACTION PLAN**

- To establish the fund, set up a separate general ledger account.
- Determine how much cash is needed to replenish the fund: subtract the cash remaining from the petty cash fund balance.
- Total the petty cash receipts. Determine any cash over or short—the difference between the cash needed to replenish the fund and the total of the petty cash receipts.
- Record the expenses incurred according to the petty cash receipts when replenishing the fund.

# Control Features of a Bank Account

**LEARNING OBJECTIVE 3**

Identify the control features of a bank account.

**The use of a bank contributes significantly to good internal control over cash.** A company safeguards its cash by using a bank as a depository and clearinghouse for checks received and checks written. The use of a bank checking account minimizes the amount of currency that must be kept on hand. It also facilitates control of cash because a double record is maintained of all bank transactions—one by the business and the other by the bank. The asset account Cash maintained by the company is the "flipside" of the bank's liability account for that company. A **bank reconciliation** is the process of comparing the bank's balance with the company's balance, and explaining the differences to make them agree.

Many companies have more than one bank account. For efficiency of operations and better control, national retailers like **Wal-Mart** and **Target** often have regional bank accounts. Similarly, a company such as **ExxonMobil** with more than 100,000 employees may have a payroll bank account as well as one or more general bank accounts. In addition, a company may maintain several bank accounts in order to have more than one source for short-term loans.

## Making Bank Deposits

An authorized employee, such as the head cashier, should make a company's bank deposits. Each deposit must be documented by a deposit slip (ticket), as shown in **Illustration 8.8**.

Deposit slips are prepared in duplicate. The bank retains the original; the depositor keeps the duplicate, machine-stamped by the bank to establish its authenticity.

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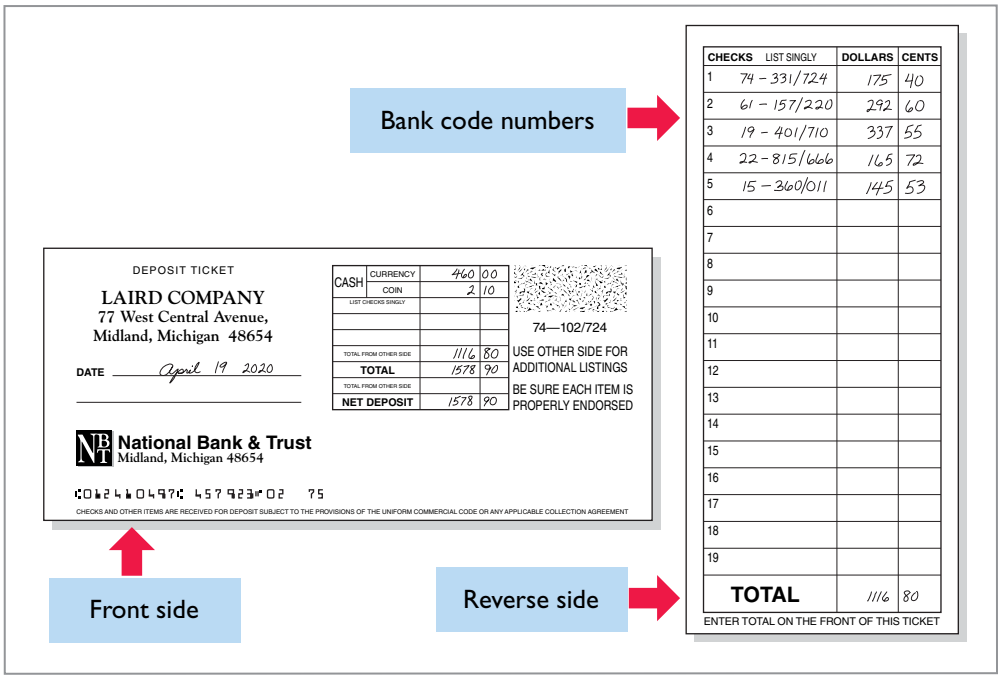
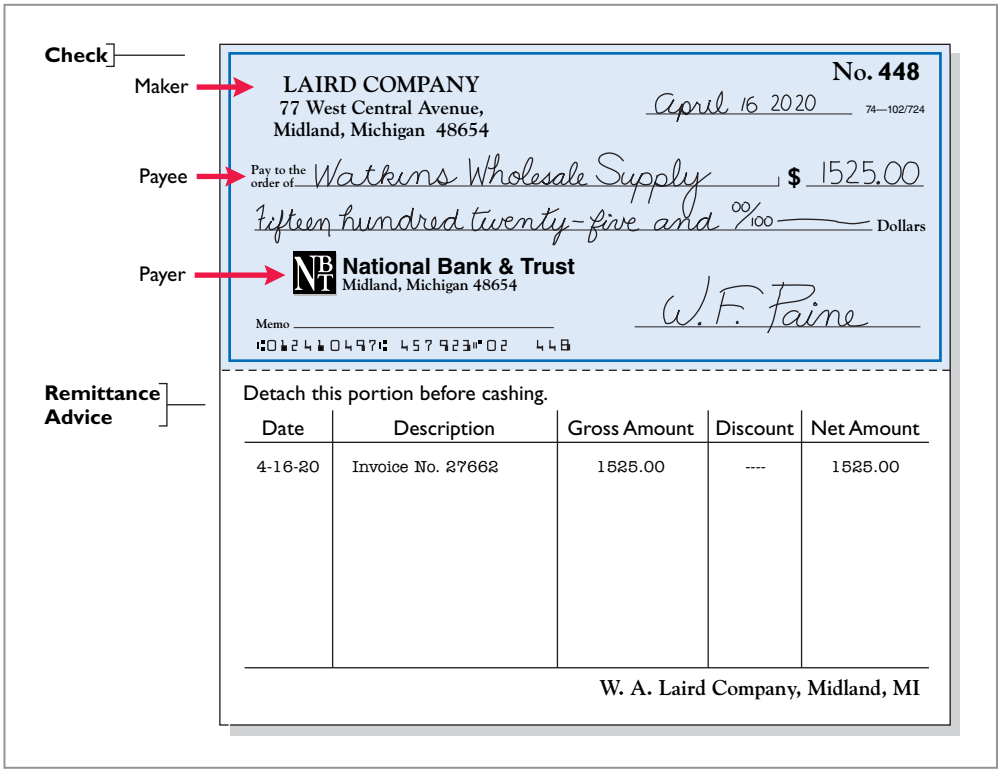
**ILLUSTRATION 8.8**
**Deposit slip**


Bank code numbers
DEPOSIT TICKET
LAIRD COMPANY
77 West Central Avenue,
Midland, Michigan 48654
DATE April 19 2020
CASH
CURRENCY 460 00
COIN 2 10
TOTAL FROM OTHER SIDE 1116 80
TOTAL 1578 90
NET DEPOSIT 1578 90
74—102/724
USE OTHER SIDE FOR ADDITIONAL LISTINGS
BE SURE EACH ITEM IS PROPERLY ENDORSED
National Bank & Trust
Midland, Michigan 48654
CHECKS AND OTHER ITEMS ARE RECEIVED FOR DEPOSIT SUBJECT TO THE PROVISIONS OF THE UNIFORM COMMERCIAL CODE OR ANY APPLICABLE COLLECTION AGREEMENT
Front side
Reverse side
CHECKS LIST SINGLY
DOLLARS
CENTS
1 74 - 331/724 175 40
2 61 - 157/220 292 60
3 19 - 401/710 337 55
4 22 - 815/666 165 72
5 15 - 360/011 145 53
TOTAL 1116 80
ENTER TOTAL ON THE FRONT OF THIS TICKET

## Writing Checks

A **check** is a written order signed by the depositor directing the bank to pay a specified sum of money to a designated recipient. There are three parties to a check: (1) the **maker** (or drawer) who issues the check, (2) the **bank** (or payer) on which the check is drawn, and (3) the **payee** to whom the check is payable. A check is a **negotiable instrument** that one party can transfer to another party by endorsement. Each check should be accompanied by an explanation of its purpose. In many companies, a remittance advice attached to the check, as shown in **Illustration 8.9**, explains the check's purpose.

**ILLUSTRATION 8.9**
**Check with remittance advice**



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## Electronic Funds Transfer (EFT) System

It is not surprising that companies and banks have developed approaches to transfer funds among parties without the use of paper (deposit tickets, checks, etc.). Such procedures, called **electronic funds transfers (EFT)**, are disbursement systems that use wire, telephone, or computers to transfer cash balances from one location to another. Use of EFT is quite common. For example, many employees receive no formal payroll checks from their employers. Instead, employers send electronic payroll data to the appropriate banks. Also, companies now frequently make regular payments such as those for utilities, rent, and insurance by EFT.

EFT transactions normally result in better internal control since no cash or checks are handled by company employees. This does not mean that opportunities for fraud are eliminated. In fact, the same basic principles related to internal control apply to EFT transfers. For example, without proper segregation of duties and authorizations, an employee might be able to redirect electronic payments into a personal bank account and conceal the theft with fraudulent accounting entries.

## Bank Statements

Each month, the company receives from the bank a **bank statement** showing its bank transactions and balances.[4] For example, the statement for Laird Company in **Illustration 8.10** shows the following: (1) checks paid and other debits (such as debit card transactions or electronic

**ILLUSTRATION 8.10**
**Bank statement**

**National Bank & Trust**
Midland, Michigan 48654 Member FDIC

**ACCOUNT STATEMENT**

LAIRD COMPANY
77 WEST CENTRAL AVENUE
MIDLAND, MICHIGAN 48654

Statement Date/Credit Line Closing Date: April 30, 2020

457923
ACCOUNT NUMBER

| Balance Last Statement | Deposits and Credits | | Checks and Debits | | Balance This Statement |
|---|---|---|---|---|---|
| | No. | Total Amount | No. | Total Amount | |
| 13,256.90 | 20 | 34,805.10 | 26 | 32,154.55 | 15,907.45 |

| Amounts Deducted from Account (debits) | | | Amounts Added to Account (credits) | | Daily Balance | |
|---|---|---|---|---|---|---|
| Date | No. | Amount | Date | Amount | Date | Amount |
| 4–2 | 435 | 644.95 | 4–2 | 4,276.85 | 4–2 | 16,888.80 |
| 4–3 | EFT | 1,000.00 | 4–3 | 2,137.50 | 4–3 | 18,249.65 |
| 4–5 | 436 | 2,260.00 | 4–5 | 1,350.47 | 4–4 | 17,063.86 |
| 4–4 | 437 | 1,185.79 | 4–7 | 982.46 | 4–5 | 15,154.33 |
| 4–3 | 438 | 776.65 | 4–8 | 1,320.28 | 4–7 | 14,648.89 |
| 4–8 | 439 | 1,781.70 | 4–9 EFT | 1,035.00 | 4–8 | 11,767.47 |
| 4–7 | 440 | 1,487.90 | 4–11 | 2,720.00 | 4–9 | 12,802.47 |
| 4–7 | EFT | 320.00 | 4–12 | 757.41 | 4–11 | 13,936.87 |
| 4–8 | 441 | 2,100.00 | 4–13 | 1,218.56 | 4–12 | 13,468.28 |
| 4–11 | 442 | 1,585.60 | | | | |
| 4–12 | 443 | 1,226.00 | | | | |
| 4–29 | NSF | 425.60 | 4–27 | 1,545.57 | 4–27 | 13,005.45 |
| 4–29 | 459 | 1,080.30 | 4–29 | 2,929.45 | 4–29 | 14,429.00 |
| 4–30 | DM | 120.00 | 4–30 | 2,128.60 | 4–30 | 15,907.45 |
| 4–30 | DM | 30.00 | | | | |
| 4–30 | 461 | 500.15 | | | | |

Symbols: **CM** Credit Memo **DM** Debit Memo **EC** Error Correction **INT** Interest Earned **NSF** Not Sufficient Funds **SC** Service Charge **EFT** Electronic Funds Transfer

[4]Our presentation assumes that a company makes all adjustments at the end of the month. In practice, a company may also make journal entries during the month as it reviews information from the bank regarding its account.

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**HELPFUL HINT**

**Essentially, the bank statement is a copy of the bank's records sent to the customer or made available online for review.**

funds transfers for bill payments) that reduce the balance in the depositor's account, (2) deposits (by direct deposit, automated teller machine, or electronic funds transfer) and other credits that increase the balance in the depositor's account, and (3) the account balance after each day's transactions (see Helpful Hint).

Remember that **bank statements are prepared from the *bank's* perspective**. For example, **every deposit the bank receives is an increase in the bank's liabilities (an account payable to the depositor)**. Therefore, in Illustration 8.10, National Bank and Trust **credits** to Laird Company every deposit it received from Laird. The reverse occurs when the bank "pays" a check issued by Laird Company on its checking account balance: Payment reduces the bank's liability and is therefore **debited** to Laird's account with the bank.

The bank statement lists in numerical sequence all paid checks along with the date the check was paid and its amount. Upon paying a check, the bank stamps the check "paid"; a paid check is sometimes referred to as a **canceled** check. In addition, the bank includes with the bank statement memoranda explaining other debits and credits it made to the depositor's account.

A check that is not paid by a bank because of insufficient funds in a bank account is called an **NSF check** (not sufficient funds). The bank uses a debit memorandum when a previously deposited customer's check "bounces" because of insufficient funds. In such a case, the customer's bank marks the check NSF (not sufficient funds) and returns it to the depositor's bank. The bank then debits (decreases) the depositor's account, as shown by the symbol NSF in Illustration 8.10, and sends the NSF check and debit memorandum to the depositor as notification of the charge. The NSF check creates an account receivable for the depositor and reduces cash in the bank account.

## Reconciling the Bank Account

Because the bank and the company maintain independent records of the company's checking account, you might assume that the respective balances will always agree. In fact, the two balances are seldom the same at any given time, and both balances differ from the "correct or true" balance. Therefore, it is necessary to make the balance per books and the balance per bank agree with the correct or true amount—a process called **reconciling the bank account**. The need for reconciliation has two causes:

1. **Time lags** that prevent one of the parties from recording the transaction in the same period.
2. **Errors** by either party in recording transactions.

Time lags occur frequently. For example, several days may elapse between the time a company pays by check and the date the bank pays the check. Similarly, when a company uses the bank's night depository to make its deposits, there will be a difference of one day between the time the company records the receipts and the time the bank does so. A time lag also occurs whenever the bank mails a debit or credit memorandum to the company.

You might think that if a company never writes checks (for example, if a small company uses only a debit card or electronic funds transfers), it does not need to reconcile its account. However, **the possibility of errors or fraud still necessitates periodic reconciliation**. The incidence of errors or fraud depends on the effectiveness of the internal controls maintained by the company and the bank. Bank errors are infrequent. However, either party could accidentally record a $450 check as $45 or $540. In addition, the bank might mistakenly charge a check drawn by C. D. Berg to the account of C. D. Burg.

### Reconciliation Procedure

In reconciling the bank account, it is customary to reconcile the balance per books and balance per bank to their adjusted (correct or true) cash balances. **To obtain maximum benefit from a bank reconciliation, an employee who has no other responsibilities related to cash should prepare the reconciliation.** When companies do not follow the internal control principle of independent internal verification in preparing the reconciliation, cash embezzlements may escape unnoticed. For example, in the "Anatomy of a Fraud" box about Angela Bauer, a bank reconciliation might have exposed her embezzlement.

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**Illustration 8.11** shows the reconciliation process. The starting point in preparing the reconciliation is to enter the balance per bank statement and balance per books on a schedule (see **Helpful Hint**). The following steps should reveal all the reconciling items that cause the difference between the two balances.

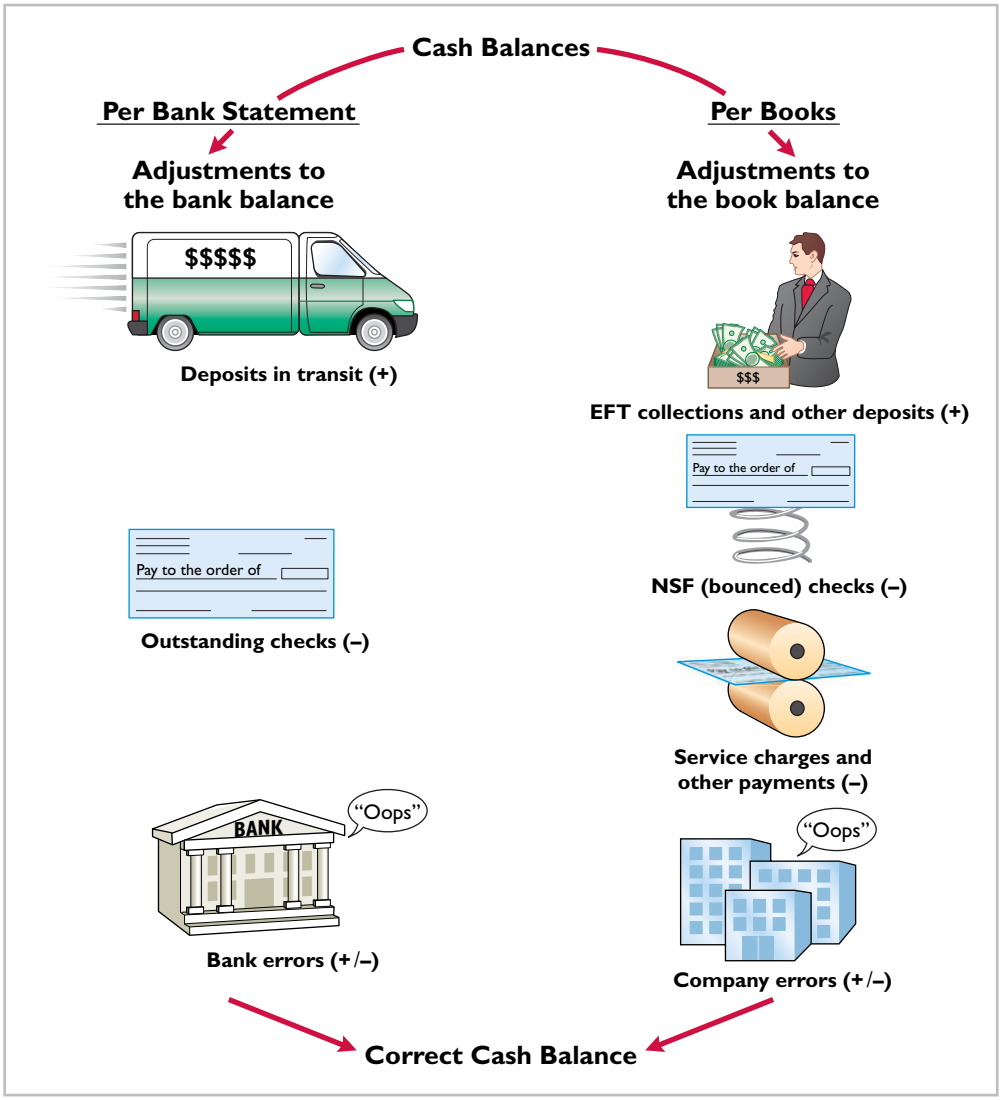


**ILLUSTRATION 8.11**
**Bank reconciliation adjustments**

**HELPFUL HINT**
Deposits in transit and outstanding checks are reconciling items because of time lags.

**Reconciling Items per Bank.** On the bank side of the reconciliation, the items to reconcile are deposits in transit (amounts added), outstanding checks (amounts deducted), and bank errors (if any). By adjusting the bank balance for these items, a company brings that balance up to date.

**Step 1.** **Deposits in transit (+).** Compare the individual deposits on the bank statement with the deposits in transit from the preceding bank reconciliation and with the deposits per company records or copies of duplicate deposit slips. Deposits recorded by the depositor that have not been recorded by the bank represent **deposits in transit**. Add these deposits to the balance per bank.

**Step 2.** **Outstanding checks (–).** Compare the paid checks shown on the bank statement or the paid checks returned with the bank statement with (a) checks outstanding from the preceding bank reconciliation, and (b) checks issued by the company recorded as cash payments. Issued checks recorded by the company that have not been paid by the bank represent **outstanding checks**. Deduct outstanding checks from the balance per bank.

**Step 3.** **Bank errors (+/–).** Note any errors made by the bank that were discovered in the previous steps. For example, if the bank processed a deposit of $1,693 as $1,639 in error, the difference of $54 ($1,693 – $1,639) is added to the balance per bank

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on the bank reconciliation. All errors made by the bank are reconciling items in determining the adjusted cash balance per the bank.

**Reconciling Items Per Books.** Reconciling items on the book side relate to amounts not yet recorded on the company's books and include adjustments from deposits and other amounts added, payments and other amounts deducted, and company errors (if any).

**Step 1.** **Other deposits (+).** Compare the other deposits on the bank statement with the company records. Any unrecorded amounts should be added to the balance per books. For example, if the bank statement shows electronic funds transfers from customers paying their accounts online, these amounts should be added to the balance per books on the bank reconciliation to update the company's records unless they had previously been recorded by the company.

**Step 2.** **Other payments (−).** Similarly, any unrecorded other payments should be deducted from the balance per books. For example, if the bank statement shows service charges (such as debit and credit card fees and other bank service charges), this amount is deducted from the balance per books on the bank reconciliation to make the company's records agree with the bank's records. **Normally, the company will already have recorded electronic payments.** However, if this has not been the case then these payments must be deducted from the balance per books on the bank reconciliation to make the company's records agree with the bank's records.

**Step 3.** **Book errors (+/−).** Note any errors made by the depositor that have been discovered in the previous steps. For example, say a company wrote check No. 443 to a supplier in the amount of $1,226 on April 12, but the accounting clerk recorded the check amount as $1,262. The error of $36 ($1,262 – $1,226) is added to the balance per books because the company reduced the balance per books by $36 too much when it recorded the check as $1,262 instead of $1,226. Only errors made by the company, not the bank, are included as reconciling items in determining the adjusted cash balance per books.

**HELPFUL HINT**

**Note in the bank statement in Illustration 8.10 that the bank has paid checks No. 459 and 461, but check No. 460 is not listed. Thus, this check is outstanding. If a complete bank statement were provided, checks No. 453 and 457 also would not be listed. Laird obtains the amounts for these three checks from its cash payments records.**

## Bank Reconciliation Illustrated

Illustration 8.10 presented the bank statement for Laird Company which the company accessed online (see **Helpful Hint**). It shows a balance per bank of $15,907.45 on April 30, 2020. On this date the balance of cash per books is $11,709.45.

From the foregoing steps, Laird determines the following reconciling items for the bank.

| | | |
|---|---|---|
| **Step 1.** | **Deposits in transit (+):** April 30 deposit (received by bank on May 1). | $2,201.40 |
| **Step 2.** | **Outstanding checks (−):** No. 453, $3,000.00; No. 457, $1,401.30; No. 460, $1,502.70. | 5,904.00 |
| **Step 3.** | **Bank errors (+/−):** None. | |

Reconciling items per books are as follows:

| | | |
|---|---|---|
| **Step 1.** | **Other deposits (+):** Unrecorded electronic receipt from customer on account on April 9 determined from the bank statement. | $1,035.00 |
| **Step 2.** | **Other payments (−):** The electronic payments on April 3 and 7 were previously recorded by the company when they were initiated. Unrecorded charges determined from the bank statement are as follows: | |
| | Returned NSF check on April 29 | 425.60 |
| | Debit and credit card fees on April 30 | 120.00 |
| | Bank service charges on April 30 | 30.00 |
| **Step 3.** | **Company errors (+):** Check No. 443 was correctly written by Laird for $1,226 and was correctly paid by the bank on April 12. However, it was recorded as $1,262 on Laird's books. | 36.00 |

**Illustration 8.12** shows Laird's bank reconciliation (see **Alternative Terminology**).

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**Laird Company**
**Bank Reconciliation**
**April 30, 2020**

| | | |
|---|---|---|
| Cash balance per bank statement | | $15,907.45 |
| Add: Deposits in transit | | 2,201.40 |
| | | 18,108.85 |
| Less: Outstanding checks | | |
| No. 453 | $3,000.00 | |
| No. 457 | 1,401.30 | |
| No. 460 | 1,502.70 | 5,904.00 |
| **Adjusted cash balance per bank** | | **$12,204.85** |
| Cash balance per books | | $11,709.45 |
| Add: Electronic funds transfer received | $1,035.00 | |
| Error in recording check No. 443 | 36.00 | 1,071.00 |
| | | 12,780.45 |
| Less: NSF check | 425.60 | |
| Debit and credit card fees | 120.00 | |
| Bank service charge | 30.00 | 575.60 |
| **Adjusted cash balance per books** | | **$12,204.85** |

**ILLUSTRATION 8.12**
**Bank reconciliation**

**ALTERNATIVE TERMINOLOGY**

**The terms *adjusted cash balance*, *true cash balance*, and *correct cash balance* are used interchangeably.**

## Entries from Bank Reconciliation

The depositor (that is, the company) next must record each reconciling item used to determine the **adjusted cash balance per books**. If the company does not journalize and post these items, the Cash account will not show the correct balance. The adjusting entries for the Laird Company bank reconciliation on April 30 are as follows (see **Helpful Hint**).

**HELPFUL HINT**

**These entries are adjusting entries. In prior chapters, we considered Cash an account that did not require adjustment because we had not yet explained a bank reconciliation.**

**Collection of Electronic Funds Transfer.** A payment of an account by a customer is recorded in the same way, whether the cash is received through the mail or electronically. The entry is as follows.

| | | | |
|---|---|---|---|
| Apr. 30 | Cash | 1,035 | |
| | Accounts Receivable | | 1,035 |
| | (To record receipt of electronic funds transfer) | | |

A = L + OE
+1,035
–1,035

**Cash Flows**
+1,035

**Book Error.** An examination of the cash disbursements journal shows that check No. 443 was a payment on account to Andrea Company, a supplier. The correcting entry is as follows.

| | | | |
|---|---|---|---|
| Apr. 30 | Cash | 36 | |
| | Accounts Payable | | 36 |
| | (To correct error in recording check No. 443) | | |

A = L + OE
+36
+36

**Cash Flows**
+36

**NSF Check.** As indicated earlier, an NSF check becomes an accounts receivable to the depositor. The entry is as follows.

| | | | |
|---|---|---|---|
| Apr. 30 | Accounts Receivable | 425.60 | |
| | Cash | | 425.60 |
| | (To record NSF check) | | |

A = L + OE
+425.60
–425.60

**Cash Flows**
–425.60

**Bank Charge Expense.** Fees for processing debit and credit card transactions are normally debited to the Bank Charge Expense account, as are bank service charges. We have chosen to combine and record these in one journal entry, as shown below, although they also could be journalized separately.

| | | | |
|---|---|---|---|
| Apr. 30 | Bank Charge Expense | 150 | |
| | Cash | | 150 |
| | (To record charges for debit and credit card fees of $120 and bank service charges of $30) | | |

A = L + OE
–150 Exp
–150

**Cash Flows**
–150

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After Laird posts the entries, the Cash account will appear as in Illustration 8.13. The adjusted cash balance in the ledger should agree with the adjusted cash balance per books in the bank reconciliation in Illustration 8.12.

**ILLUSTRATION 8.13**
**Adjusted balance in Cash account**

**Cash**

| | | | | | |
|---|---|---|---|---|---|
| Apr. | 30 Bal. | 11,709.45 | Apr. | 30 | 425.60 |
| | 30 | 1,035.00 | | 30 | 150.00 |
| | 30 | 36.00 | | | |
| Apr. | 30 Bal. | **12,204.85** | | | |

What entries does the bank make? If the company discovers any bank errors in preparing the reconciliation, it should notify the bank so the bank can make the necessary corrections on its records. The bank does not make any entries for deposits in transit or outstanding checks. Only when these items reach the bank will the bank record these items.

## Investor Insight

Mary Altaffer/©AP/Wide World Photos

### Madoff's Ponzi Scheme

No recent fraud has generated more interest and rage than the one perpetrated by Bernard Madoff. Madoff was an elite New York investment fund manager who was highly regarded by securities regulators. Investors flocked to him because he delivered very steady returns of between 10% and 15%, no matter whether the market was going up or going down. However, for many years, Madoff did not actually invest the cash that people gave to him. Instead, he was running a Ponzi scheme: He paid returns to existing investors using cash received from new investors. As long as the size of his investment fund continued to grow from new investments at a rate that exceeded the amounts that he needed to pay out in returns, Madoff was able to operate his fraud smoothly.

To conceal his misdeeds, Madoff fabricated false investment statements that were provided to investors. In addition, Madoff hired an auditor that never verified the accuracy of the investment records but automatically issued unqualified opinions each year. A competing fund manager warned the SEC a number of times over a nearly 10-year period that he thought Madoff was engaged in fraud. The SEC never aggressively investigated the allegations. Investors, many of which were charitable organizations, lost more than $18 billion. Madoff was sentenced to a jail term of 150 years.

**How was Madoff able to conceal such a giant fraud? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 3 | Bank Reconciliation

Sally Kist owns Linen Kist Fabrics. Sally asks you to explain how she should treat the following reconciling items when reconciling the company's bank account: (1) a debit memorandum for an NSF check, (2) a credit memorandum received by the bank for an electronic funds transfer from one of the company's customers, (3) outstanding checks, and (4) a deposit in transit.

**ACTION PLAN**

- **Understand the purpose of a bank reconciliation.**
- **Identify time lags and explain how they cause reconciling items.**

### Solution

Sally should treat the reconciling items as follows.

1. NSF check: Deduct from balance per books.
2. Electronic funds transfer received by bank: Add to balance per books.
3. Outstanding checks: Deduct from balance per bank.
4. Deposit in transit: Add to balance per bank.

Related exercise material: **BE8.10, BE8.11, BE8.12, BE8.13, BE8.14, BE8.15, DO IT! 8.3, E8.9, E8.10, E8.11, E8.12, and E8.13.**

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# Reporting Cash

**LEARNING OBJECTIVE 4**

Explain the reporting of cash.

**Cash** consists of coins, currency (paper money), checks, money orders, and money on hand or on deposit in a bank or similar depository. Companies report cash in two different statements: the balance sheet and the statement of cash flows. The balance sheet reports the amount of cash available at a given point in time. The statement of cash flows shows the sources and uses of cash during a period of time. The statement of cash flows was introduced in Chapter 1 and will be discussed in much detail in Chapter 17. In this section, we discuss some important points regarding the presentation of cash in the balance sheet.

When presented in a balance sheet, cash on hand, cash in banks, and petty cash are often combined and reported simply as **Cash**. Because it is the most liquid asset owned by the company, cash is listed first in the current assets section of the balance sheet.

## Cash Equivalents

Many companies use the designation "Cash and cash equivalents" in reporting cash. (See **Illustration 8.14** for an example.) **Cash equivalents** are short-term, highly liquid investments that are both:

1. Readily convertible to known amounts of cash, and
2. So near their maturity that their market value is relatively insensitive to changes in interest rates. (Generally, only investments with original maturities of three months or less qualify under this definition.)

Real World

**Delta Air Lines, Inc.**
**Balance Sheet**
**(partial, in millions)**

| | |
|---|---|
| **Assets** | |
| Current assets | |
| **Cash and cash equivalents** | **$2,844** |
| Short-term investments | 959 |
| **Restricted cash** | **122** |

**ILLUSTRATION 8.14**
**Balance sheet presentation of cash**

Examples of cash equivalents are Treasury bills, commercial paper (short-term corporate notes), and money market funds. All typically are purchased with cash that is in excess of immediate needs (see **Ethics Note**).

Occasionally, a company will have a net negative balance in its bank account. In this case, the company should report the negative balance among current liabilities. For example, farm equipment manufacturer **Ag-Chem** at one time reported "Checks outstanding in excess of cash balances" of $2,145,000 among its current liabilities.

**ETHICS NOTE**

**Recently, some companies were forced to restate their financial statements because they had too broadly interpreted which types of investments could be treated as cash equivalents. By reporting these items as cash equivalents, the companies made themselves look more liquid.**

## Restricted Cash

A company may have **restricted cash**, cash that is not available for general use but rather is restricted for a special purpose. For example, landfill companies are often required to maintain

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a fund of restricted cash to ensure they will have adequate resources to cover closing and clean-up costs at the end of a landfill site's useful life. **McKesson Corp.** recently reported restricted cash of $962 million to be paid out as the result of investor lawsuits.

Cash restricted in use should be reported separately on the balance sheet as restricted cash. If the company expects to use the restricted cash within the next year, it reports the amount as a current asset. When this is not the case, it reports the restricted funds as a noncurrent asset.

Illustration 8.14 shows restricted cash reported in the financial statements of **Delta Air Lines**. The company is required to maintain restricted cash as collateral to support insurance obligations related to workers' compensation claims. Delta does not have access to these funds for general use, and so it must report them separately, rather than as part of cash and cash equivalents.

### DO IT! 4 | Reporting Cash

Indicate whether each of the following statements is true or false. If false, indicate how to correct the statement.

1. Cash and cash equivalents are comprised of coins, currency (paper money), money orders, and NSF checks.
2. Restricted cash is classified as either a current asset or noncurrent asset, depending on the circumstances.
3. A company may have a negative balance in its bank account. In this case, it should offset this negative balance against cash and cash equivalents on the balance sheet.
4. Because cash and cash equivalents often includes short-term investments, accounts receivable should be reported as the first item on the balance sheet.

**ACTION PLAN**

- Understand how companies present cash and restricted cash on the balance sheet.
- Review the designations of cash equivalents and restricted cash, and how companies typically handle them.

**Solution**

**1.** False. NSF checks should be reported as receivables, not cash and cash equivalents. **2.** True. **3.** False. Companies that have a negative balance in their bank accounts should report the negative balance as a current liability. **4.** False. Cash equivalents are readily convertible to known amounts of cash, and so near maturity (less than 3 months) that they are considered more liquid than accounts receivable and therefore are reported before accounts receivable on the balance sheet.

Related exercise material: **BE8.16, DO IT! 8.4, E8.14, and E8.15.**

# Review and Practice

## Learning Objectives Review

**1 Define fraud and the principles of internal control.**

A fraud is a dishonest act by an employee that results in personal benefit to the employee at a cost to the employer. The fraud triangle refers to the three factors that contribute to fraudulent activity by employees: opportunity, financial pressure, and rationalization. Internal control consists of all the related methods and measures adopted within an organization to safeguard its assets, enhance the reliability of its accounting records, increase efficiency of operations, and ensure compliance with laws and regulations.

The principles of internal control are establishment of responsibility, segregation of duties, documentation procedures, physical controls, independent internal verification, and human resource controls such as bonding and requiring employees to take vacations.

**2 Apply internal control principles to cash.**

Internal controls over cash receipts include (a) designating specific personnel to handle cash; (b) assigning different individuals to receive

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cash, record cash, and maintain custody of cash; (c) using remittance advices for mail receipts, cash register tapes for over-the-counter receipts, and deposit slips for bank deposits; (d) using company safes and bank vaults to store cash with access limited to authorized personnel, and using cash registers or point-of-sale terminals in executing over-the-counter receipts; (e) making independent daily counts of register receipts and daily comparison of total receipts with total deposits; and (f) bonding personnel that handle cash and requiring them to take vacations.

Internal controls over cash disbursements include (a) having specific individuals such as the treasurer authorized to sign checks and approve vendors; (b) assigning different individuals to approve items for payment, make the payment, and record the payment; (c) using prenumbered checks and accounting for all checks, with each check supported by an approved invoice; (d) storing blank checks in a safe or vault with access restricted to authorized personnel, and using a check-writing machine to imprint amounts on checks; (e) comparing each check with the approved invoice before issuing the check, and making monthly reconciliations of bank and book balances; and (f) bonding personnel who handle cash, requiring employees to take vacations, and conducting background checks.

Companies operate a petty cash fund to pay relatively small amounts of cash. They must establish the fund, make payments from the fund, and replenish the fund when the cash in the fund reaches a minimum level.

### 3 Identify the control features of a bank account.

A bank account contributes to good internal control by providing physical controls for the storage of cash. It minimizes the amount of currency that a company must keep on hand, and it creates a double record of a depositor's bank transactions. It is customary to reconcile the balance per books and balance per bank to their adjusted balances. The steps in the reconciling process are to determine deposits in transit and electronic funds transfers received by bank, outstanding checks, errors by the depositor or the bank, and unrecorded bank memoranda.

### 4 Explain the reporting of cash.

Companies list cash first in the current assets section of the balance sheet. In some cases, they report cash together with cash equivalents. Cash restricted for a special purpose is reported separately as a current asset or as a noncurrent asset, depending on when the cash is expected to be used.

## Glossary Review

**Bank reconciliation** The process of comparing the bank's balance of an account with the company's balance and explaining any differences to make them agree. (p. 8-19).

**Bank statement** A monthly statement from the bank that shows the depositor's bank transactions and balances. (p. 8-21).

**Bonding** Obtaining insurance protection against theft by employees. (p. 8-9).

**Cash** Resources that consist of coins, currency, checks, money orders, and money on hand or on deposit in a bank or similar depository. (p. 8-27).

**Cash equivalents** Short-term, highly liquid investments that can be converted to a specific amount of cash. (p. 8-27).

**Check** A written order signed by a bank depositor, directing the bank to pay a specified sum of money to a designated recipient. (p. 8-20).

**Deposits in transit** Deposits recorded by the depositor but not yet recorded by the bank. (p. 8-23).

**Electronic funds transfer (EFT)** A disbursement system that uses wire, telephone, or computers to transfer funds from one location to another. (p. 8-21).

**Fraud** A dishonest act by an employee that results in personal benefit to the employee at a cost to the employer. (p. 8-3).

**Fraud triangle** The three factors that contribute to fraudulent activity by employees: opportunity, financial pressure, and rationalization. (p. 8-3).

**Internal auditors** Company employees who continuously evaluate the effectiveness of the company's internal control system. (p. 8-9).

**Internal control** A process designed to provide reasonable assurance regarding the achievement of company objectives related to operations, reporting, and compliance. (p. 8-4).

**NSF check** A check that is not paid by a bank because of insufficient funds in a customer's bank account. (p. 8-22).

**Outstanding checks** Checks issued and recorded by a company but not yet paid by the bank. (p. 8-23).

**Petty cash fund** A cash fund used to pay relatively small amounts. (p. 8-16).

**Restricted cash** Cash that must be used for a special purpose. (p. 8-27).

**Sarbanes-Oxley Act (SOX)** Regulations passed by Congress to try to reduce unethical corporate behavior. (p. 8-3).

**Voucher** An authorization form prepared for each payment in a voucher system. (p. 8-15).

**Voucher system** A network of approvals by authorized individuals acting independently to ensure that all disbursements by check are proper. (p. 8-15).

## Practice Multiple-Choice Questions

**1. (LO 1)** Which of the following is **not** an element of the fraud triangle?

- **a.** Rationalization.
- **b.** Financial pressure.
- **c.** Segregation of duties.
- **d.** Opportunity.

**2. (LO 1)** An organization uses internal control to enhance the accuracy and reliability of accounting records and to:

- **a.** safeguard assets.
- **b.** prevent fraud.
- **c.** produce correct financial statements.
- **d.** deter employee dishonesty.

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3. (LO 1) Which of the following was **not** a result of the Sarbanes-Oxley Act?
   - **a.** Companies must file financial statements with the Internal Revenue Service.
   - **b.** All publicly traded companies must maintain adequate internal controls.
   - **c.** The Public Company Accounting Oversight Board was created to establish auditing standards and regulate auditor activity.
   - **d.** Corporate executives and board of directors must ensure that controls are reliable and effective, and they can be fined or imprisoned for failure to do so.

4. (LO 1) The principles of internal control do **not** include:
   - **a.** establishment of responsibility.
   - **b.** documentation procedures.
   - **c.** management responsibility.
   - **d.** independent internal verification.

5. (LO 1) Physical controls do **not** include:
   - **a.** safes and vaults to store cash.
   - **b.** independent bank reconciliations.
   - **c.** locked warehouses for inventories.
   - **d.** bank safety deposit boxes for important papers.

6. (LO 1) Which of the following control activities is **not** relevant when a company uses a computerized (rather than manual) accounting system?
   - **a.** Establishment of responsibility.
   - **b.** Segregation of duties.
   - **c.** Independent internal verification.
   - **d.** All of these control activities are relevant to a computerized system.

7. (LO 2) Permitting only designated personnel to handle cash receipts is an application of the principle of:
   - **a.** segregation of duties.
   - **b.** establishment of responsibility.
   - **c.** independent internal verification.
   - **d.** human resource controls.

8. (LO 2) The use of prenumbered checks in disbursing cash is an application of the principle of:
   - **a.** establishment of responsibility.
   - **b.** segregation of duties.
   - **c.** physical controls.
   - **d.** documentation procedures.

9. (LO 2) A company writes a check to replenish a $100 petty cash fund when the fund contains receipts of $94 and $4 in cash. In recording the check, the company should:
   - **a.** debit Cash Over and Short for $2.
   - **b.** debit Petty Cash for $94.
   - **c.** credit Cash for $94.
   - **d.** credit Petty Cash for $2.

10. (LO 3) The control features of a bank account do **not** include:
    - **a.** having bank auditors verify the correctness of the bank balance per books.
    - **b.** minimizing the amount of cash that must be kept on hand.
    - **c.** providing a double record of all bank transactions.
    - **d.** safeguarding cash by using a bank as a depository.

11. (LO 3) In a bank reconciliation, deposits in transit are:
    - **a.** deducted from the book balance.
    - **b.** added to the book balance.
    - **c.** added to the bank balance.
    - **d.** deducted from the bank balance.

12. (LO 3) The reconciling item in a bank reconciliation that will result in an adjusting entry by the depositor is:
    - **a.** outstanding checks.
    - **b.** deposit in transit.
    - **c.** a bank error.
    - **d.** bank service charges.

13. (LO 4) Which of the following items in a cash drawer at November 30 is **not** cash?
    - **a.** Money orders.
    - **b.** Coins and currency.
    - **c.** An NSF check.
    - **d.** A customer check dated November 28.

14. (LO 4) Which of the following statements correctly describes the reporting of cash?
    - **a.** Cash cannot be combined with cash equivalents.
    - **b.** Restricted cash funds may be combined with cash.
    - **c.** Cash is listed first in the current assets section.
    - **d.** Restricted cash funds cannot be reported as a current asset.

## Solutions

1. **c.** Segregation of duties is not an element of the fraud triangle. The other choices are fraud triangle elements.

2. **a.** Safeguarding assets is one of the purposes of using internal control. The other choices are incorrect because while internal control can help to (b) prevent fraud, (c) produce correct financial statements, and (d) deter employee dishonesty, these are not the main purposes of using it.

3. **a.** Filing financial statements with the IRS is not a result of the Sarbanes-Oxley Act (SOX); SOX focuses on the prevention or detection of fraud. The other choices are results of SOX.

4. **c.** Management responsibility is not one of the principles of internal control. The other choices are true statements.

5. **b.** Independent bank reconciliations are not a physical control. The other choices are true statements.

6. **d.** Establishment of responsibility, segregation of duties and independent internal verification are all relevant to a computerized system.

7. **b.** Permitting only designated personnel to handle cash receipts is an application of the principle of establishment of responsibility, not (a) segregation of duties, (c) independent internal verification, or (d) human resource controls.

8. **d.** The use of prenumbered checks in disbursing cash is an application of the principle of documentation procedures, not (a) establishment of responsibility, (b) segregation of duties, or (c) physical controls.

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**9. a.** When this check is recorded, the company should debit Cash Over and Short for the shortage of $2 (total of the receipts plus cash in the drawer ($98) versus $100), not (b) debit Petty Cash for $94, (c) credit Cash for $94, or (d) credit Petty Cash for $2.

**10. a.** Having bank auditors verify the correctness of the bank balance per books is not one of the control features of a bank account. The other choices are true statements.

**11. c**. Deposits in transit are added to the bank balance on a bank reconciliation, not (a) deducted from the book balance, (b) added to the book balance, or (d) deducted from the bank balance.

**12. d.** Because the depositor does not know the amount of the bank service charges until the bank statements is received, an adjusting entry must be made when the statement is received. The other choices are incorrect because (a) outstanding checks do not require an adjusting entry by the depositor because the checks have already been recorded in the depositor's books, (b) deposits in transit do not require an adjusting entry by the depositor because the deposits have already been recorded in the depositor's books, and (c) bank errors do not require an adjusting entry by the depositor, but the depositor does need to inform the bank of the error so it can be corrected.

**13. c.** An NSF check should not be considered cash. The other choices are true statements.

**14. c.** Cash is listed first in the current assets section. The other choices are incorrect because (a) cash and cash equivalents can be appropriately combined when reporting cash on the balance sheet, (b) restricted cash is not to be combined with cash when reporting cash on the balance sheet, and (d) restricted funds can be reported as current assets if they will be used within one year.

## Practice Brief Exercises

**1. (LO 2)** On May 31, Tyler's petty cash fund of $200 is replenished when the fund contains $7 in cash and receipts for postage $105, freight-out $49, and miscellaneous expense $40. Prepare the journal entry to record the replenishment of the petty cash fund.

*Prepare entry to replenish a petty cash fund.*

### Solution

**1.**

| | | | |
|---|---|---|---|
| Mar. 20 | Postage Expense | 105 | |
| | Freight-Out | 49 | |
| | Miscellaneous Expense | 40 | |
| | Cash | | 193 |
| | Cash Over and Short | | 1 |

**2. (LO 3)** At August 31, Saladino Company has the following bank information: cash balance per bank $5,200, outstanding checks $1,462, deposits in transit $1,211, and a bank debit memo $110. Determine the adjusted cash balance per bank at July 31.

*Prepare partial bank reconciliation.*

### Solution

**2.**

| | |
|---|---|
| Cash balance per bank | $5,200 |
| Add: Deposits in transit | 1,211 |
| | 6,411 |
| Less: Outstanding checks | 1,462 |
| Adjusted cash balance per bank | $4,949 |

**3. (LO 4)** **Financial Statement** Zian Company has the following cash balances: Cash in Bank $18,762, Payroll Bank Account $8,000, Petty Cash $150, and Plant Expansion Fund Cash $30,000 to be used 2 years from now. Explain how each balance should be reported on the balance sheet.

*Explain the statement presentation of cash balances.*

### Solution

**3.** Zian Company should report Cash in Bank, Payroll Bank Account, and Petty Cash as current assets (usually combined as one Cash amount). Plant Expansion Fund Cash should be reported as a noncurrent asset, assuming the fund is not expected to be used during the next year.

## Practice Exercises

**1. (LO 1, 2)** Listed below are five procedures followed by Viel Company.

*Indicate good or weak internal control procedures.*

**1.** Total cash receipts are compared to bank deposits daily by Vonda Marshall, who receives cash over the counter.

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2. Employees write down hours worked and turn in the sheet to the cashier's office.
3. As a cost-saving measure, employees do not take vacations.
4. Only the sales manager can approve credit sales.
5. Three different employees are assigned one task each related to inventory: ship goods to customers, bill customers, and receive payment from customers.

### Instructions

Indicate whether each procedure is an example of good internal control or of weak internal control. If it is an example of good internal control, indicate which internal control principle is being followed. If it is an example of weak internal control, indicate which internal control principles is violated. Use the table below.

| Procedure | IC Good or Weak? | Related Internal Control Principle |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

### Solution

1.

| Procedure | IC Good or Weak? | Related Internal Control Principle |
|---|---|---|
| 1. | Weak | Independent internal verification |
| 2. | Weak | Physical controls |
| 3. | Weak | Human resource controls |
| 4. | Good | Establishment of responsibility |
| 5. | Good | Segregation of duties |

*Prepare bank reconciliation and adjusting entries.*

**2. (LO 3)** The information below relates to the Cash account in the ledger of Hillfarms Company.

Balance June 1—$9,947; Cash deposited—$37,120.
Balance June 30—$10,094; Checks written—$36,973.

The June bank statement shows a balance of $9,525 on June 30 and the following memoranda.

| Credits | | Debits | |
|---|---|---|---|
| Collection of electronic funds transfer | $884 | NSF check: R. Doll | $245 |
| Interest earned on checking accounts | $26 | Safety deposit box rent | $35 |

At June 30, deposits in transit were $2,581, and outstanding checks totaled $1,382.

### Instructions

**a.** Prepare the bank reconciliation at June 30.

**b.** Prepare the adjusting entries at June 30, assuming the NSF check was from a customer on account.

### Solution

2. **a.**

**Hillfarms Company**
**Bank Reconciliation**
**June 30**

| | |
|---|---|
| Cash balance per bank statement | $ 9,525 |
| Add: Deposits in transit | 2,581 |
| | 12,106 |
| Less: Outstanding checks | 1,382 |
| Adjusted cash balance per bank | $10,724 |

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| | | |
|---|---|---|
| Cash balance per books | | $10,094 |
| Add: Electronic funds transfer received | $884 | |
| Interest earned | 26 | 910 |
| | | 11,004 |
| Less: NSF check | 245 | |
| Safety deposit box rent | 35 | 280 |
| Adjusted cash balance per books | | $10,724 |

**b.**

| | | | | |
|---|---|---|---|---|
| June 30 | Cash | | 884 | |
| | Accounts Receivable | | | 884 |
| 30 | Cash | | 26 | |
| | Interest Revenue | | | 26 |
| 30 | Bank Charge Expense | | 35 | |
| | Cash | | | 35 |
| 30 | Accounts Receivable (R. Doll) | | 245 | |
| | Cash | | | 245 |

## Practice Problem

*Prepare bank reconciliation and journalize entries.*

**(LO 3)** Poorten Company's bank statement for May 2020 shows the following data.

| | | | |
|---|---|---|---|
| Balance 5/1 | $12,650 | Balance 5/31 | $14,280 |
| Debit memorandum: | | Credit memorandum: | |
| NSF check | $175 | Collection of electronic funds transfer | $505 |

The cash balance per books at May 31 is $13,319. Your review of the data reveals the following.

1. The NSF check was from Copple Co., a customer.
2. Outstanding checks at May 31 total $2,410.
3. Deposits in transit at May 31 total $1,752.
4. A Poorten Company check for $352, dated May 10, cleared the bank on May 25. The company recorded this check, which was a payment on account, for $325.

### Instructions

**a.** Prepare a bank reconciliation at May 31.

**b.** Journalize the entries required by the reconciliation.

### Solution

**a.**

**Poorten Company**
**Bank Reconciliation**
**May 31, 2020**

| | | |
|---|---|---|
| Cash balance per bank statement | | $14,280 |
| Add: Deposits in transit | | 1,752 |
| | | 16,032 |
| Less: Outstanding checks | | 2,410 |
| Adjusted cash balance per bank | | $13,622 |
| Cash balance per books | | $13,319 |
| Add: Electronic funds transfer received | | 505 |
| | | 13,824 |
| Less: NSF check | $175 | |
| Error in recording check ($352 − $325) | 27 | 202 |
| Adjusted cash balance per books | | $13,622 |

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**b.**

| | | | |
|---|---|---|---|
| May 31 | Cash | 505 | |
| | Accounts Receivable | | 505 |
| | (To record receipt of electronic funds transfer) | | |
| 31 | Accounts Receivable | 175 | |
| | Cash | | 175 |
| | (To record NSF check) | | |
| 31 | Accounts Payable | 27 | |
| | Cash | | 27 |
| | (To correct error in recording check) | | |

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

## Questions

**1.** A local bank reported that it lost $150,000 as the result of an employee fraud. Edward Jasso is not clear on what is meant by an "employee fraud." Explain the meaning of fraud to Edward and give an example of frauds that might occur at a bank.

**2.** Fraud experts often say that there are three primary factors that contribute to employee fraud. Identify the three factors and explain what is meant by each.

**3.** Identify the five components of a good internal control system.

**4.** "Internal control is concerned only with enhancing the accuracy of the accounting records." Do you agree? Explain.

**5.** Discuss how the Sarbanes-Oxley Act has increased the importance of internal control to top managers of a company.

**6.** What principles of internal control apply to most organizations?

**7.** In the corner grocery store, all sales clerks make change out of one cash register drawer. Is this a violation of internal control? Why?

**8.** Liz Kelso is reviewing the principle of segregation of duties. What are the two common applications of this principle?

**9.** How do documentation procedures contribute to good internal control?

**10.** What internal control objectives are met by physical controls?

**11.** (a) Explain the control principle of independent internal verification. (b) What practices are important in applying this principle?

**12.** As the company accountant, the management of Nickle Company asks you to explain (a) the concept of reasonable assurance in internal control and (b) the importance of the human factor in internal control.

**13.** What principle(s) of internal control is (are) involved in making daily cash counts of over-the-counter receipts?

**14.** Assume that **Kohl's** installed new electronic cash registers in its department stores. How do cash registers improve internal control over cash receipts?

**15.** At Kellum Wholesale Company, two mail clerks open all mail receipts. How does this strengthen internal control?

**16.** "To have maximum effective internal control over cash disbursements, all payments should be made by check." Is this true? Explain.

**17.** Ken Deangelo Company's internal controls over cash disbursements provide for the treasurer to sign checks imprinted by a check-writing machine in indelible ink after comparing the check with the approved invoice. Identify the internal control principles that are present in these controls.

**18.** Explain how these principles apply to cash disbursements: (a) physical controls and (b) human resource controls.

**19.** (a) What is a voucher system? (b) What principles of internal control apply to a voucher system?

**20.** What is the essential feature of an electronic funds transfer (EFT) procedure?

**21.** (a) Identify the three activities that pertain to a petty cash fund and indicate an internal control principle that is applicable to each activity. (b) When are journal entries required in the operation of a petty cash fund?

**22.** "The use of a bank contributes significantly to good internal control over cash." Is this true? Why or why not?

**23.** Anna Korte is confused about the lack of agreement between the cash balance per books and the balance per bank. Explain the causes for the lack of agreement to Anna, and give an example of each cause.

**24.** Heather Kemp asks your help concerning an NSF check. Explain to Heather (a) what an NSF check is, (b) how it is treated in a bank reconciliation, and (c) whether it will require an adjusting entry.

**25.** (a) "Cash equivalents are the same as cash." Do you agree? Explain. (b) How should restricted cash funds be reported on the balance sheet?

**26.** Riverside Fertilizer Co. owns the following assets at the balance sheet date.

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| | |
|---|---|
| Cash in bank savings account | $ 8,000 |
| Cash on hand | 850 |
| Cash refund due from the IRS | 1,000 |
| Checking account balance | 14,000 |
| Postdated checks | 500 |

What amount should Riverside report as cash in the balance sheet?

**27.** At what amount does **Apple** report cash and cash equivalents in its 2015 consolidated balance sheet?

## Brief Exercises

**BE8.1 (LO 1)** Match each situation with the fraud triangle factor—opportunity, financial pressure, or rationalization—that best describes it. *Identify fraud triangle concepts.*

**a.** An employee's monthly credit card payments are nearly 75% of his or her monthly earnings.

**b.** An employee earns minimum wage at a firm that has reported record earnings for each of the last five years.

**c.** An employee has an expensive gambling habit.

**d.** An employee has check-writing and signing responsibilities for a small company, as well as reconciling the bank account.

**BE8.2 (LO 1)** Shelly Eckert has prepared the following list of statements about internal control. *Indicate internal control concepts.*

**a.** One of the objectives of internal control is to safeguard assets from employee theft, robbery, and unauthorized use.

**b.** One of the objectives of internal control is to enhance the accuracy and reliability of the accounting records.

**c.** No laws require U.S. corporations to maintain an adequate system of internal control.

Identify each statement as true or false. If false, indicate how to correct the statement.

**BE8.3 (LO 1)** Jessica Mahan is the new owner of Penny Parking. She has heard about internal control but is not clear about its importance for her business. Explain to Jessica the four purposes of internal control and give her one application of each purpose for Penny Parking. *Explain the importance of internal control.*

**BE8.4 (LO 1)** The internal control procedures in Valentine Company result in the following provisions. Identify the principles of internal control that are being followed in each case. *Identify internal control principles.*

**a.** Employees who have physical custody of assets do not have access to the accounting records.

**b.** Each month, the assets on hand are compared to the accounting records by an internal auditor.

**c.** A prenumbered shipping document is prepared for each shipment of goods to customers.

**BE8.5 (LO 2)** Rosenquist Company has the following internal control procedures over cash receipts. Identify the internal control principle that is applicable to each procedure. *Identify the internal control principles applicable to cash receipts.*

**a.** All over-the-counter receipts are entered in cash registers.

**b.** All cashiers are bonded.

**c.** Daily cash counts are made by cashier department supervisors.

**d.** The duties of receiving cash, recording cash, and custody of cash are assigned to different individuals.

**e.** Only cashiers may operate cash registers.

**BE8.6 (LO 2)** The cash register tape for Bluestem Industries reported sales of $6,871.50. Record the journal entry that would be necessary for each of the following situations. (a) Cash to be accounted for exceeds cash on hand by $50.75. (b) Cash on hand exceeds cash to be accounted for by $28.32. *Make journal entries for cash overage and shortfall.*

**BE8.7 (LO 2)** While examining cash receipts information, the accounting department determined the following information: opening cash balance $160, cash on hand $1,125.74, and cash sales per register tape $980.83. Prepare the required journal entry based upon the cash count sheet. *Make journal entry using cash count sheet.*

**BE8.8 (LO 2)** Pennington Company has the following internal control procedures over cash disbursements. Identify the internal control principle that is applicable to each procedure. *Identify the internal control principles applicable to cash disbursements.*

**a.** Company checks are prenumbered.

**b.** The bank statement is reconciled monthly by an internal auditor.

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**c.** Blank checks are stored in a safe in the treasurer's office.

**d.** Only the treasurer or assistant treasurer may sign checks.

**e.** Check-signers are not allowed to record cash disbursement transactions.

*Prepare entry to replenish a petty cash fund.*

**BE8.9 (LO 2)** On March 20, Dody's petty cash fund of $100 is replenished when the fund contains $9 in cash and receipts for postage $52, freight-out $26, and travel expense $10. Prepare the journal entry to record the replenishment of the petty cash fund.

*Identify the control features of a bank account.*

**BE8.10 (LO 3)** Lance Bachman is uncertain about the control features of a bank account. Explain the control benefits of (a) a check and (b) a bank statement.

*Indicate location of reconciling items in a bank reconciliation.*

**BE8.11 (LO 3)** The following reconciling items are applicable to the bank reconciliation for Ellington Company. Indicate how each item should be shown on a bank reconciliation: (a) outstanding checks, (b) bank debit memorandum for service charge, (c) bank credit memorandum for collecting a note for the depositor, and (d) deposits in transit.

*Identify reconciling items that require adjusting entries.*

**BE8.12 (LO 3)** Using the data in BE8.11, indicate (a) the items that will result in an adjustment to the depositor's records and (b) why the other items do not require adjustment.

*Prepare partial bank reconciliation.*

**BE8.13 (LO 3)** At July 31, Ramirez Company has the following bank information: cash balance per bank $7,420, outstanding checks $762, deposits in transit $1,620, and a bank service charge $20. Determine the adjusted cash balance per bank at July 31.

*Prepare partial bank reconciliation.*

**BE8.14 (LO 3)** At August 31, Pratt Company has a cash balance per books of $9,500 and the following additional data from the bank statement: charge for printing Pratt Company checks $35, interest earned on checking account balance $40, and outstanding checks $800. Determine the adjusted cash balance per books at August 31.

*Compute outstanding checks.*

**BE8.15 (LO 3)** In the month of November, Fiesta Company Inc. wrote checks in the amount of $9,750. In December, checks in the amount of $11,762 were written. In November, $8,800 of these checks were presented to the bank for payment, and $10,889 in December. What is the amount of outstanding checks at the end of November? At the end of December?

*Explain the statement presentation of cash balances.*

**BE8.16 (LO 4)** **Financial Statement** Zhang Company has the following cash balances: Cash in Bank $15,742, Payroll Bank Account $6,000, and Plant Expansion Fund Cash $25,000 to be used two years from now. Explain how each balance should be reported on the balance sheet.

## DO IT! Exercises

*Identify violations of control activities.*

**DO IT! 8.1 (LO 1)** Identify which control activity is violated in each of the following situations, and explain how the situation creates an opportunity for fraud or inappropriate accounting practices.

**1.** Once a month, the sales department sends sales invoices to the accounting department to be recorded.

**2.** Leah Hutcherson orders merchandise for Rice Lake Company; she also receives merchandise and authorizes payment for merchandise.

**3.** Several clerks at Great Foods use the same cash register drawer.

*Design system of internal control over cash receipts.*

**DO IT! 8.2a (LO 2)** Gary Stanten is concerned with control over mail receipts at Gary's Sporting Goods. All mail receipts are opened by Al Krane. Al sends the checks to the accounting department, where they are stamped "For Deposit Only." The accounting department records and deposits the mail receipts weekly. Gary asks for your help in installing a good system of internal control over mail receipts.

*Make journal entries for petty cash fund.*

**DO IT! 8.2b (LO 2)** Wilkinson Company established a $100 petty cash fund on August 1. On August 31, the fund had $7 cash remaining and petty cash receipts for postage $31, office supplies $42, and miscellaneous expense $16. Prepare journal entries to establish the fund on August 1 and replenish the fund on August 31.

*Explain treatment of items in bank reconciliation.*

**DO IT! 8.3 (LO 3)** Roger Richman owns Richman Blankets. He asks you to explain how he should treat the following reconciling items when reconciling the company's bank account.

**1.** Outstanding checks.

**2.** A deposit in transit.

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3. The bank charged to the company account a check written by another company.
4. A debit memorandum for a bank service charge.

**DO IT! 8.4 (LO 4)** Indicate whether each of the following statements is true or false.

*Analyze statements about the reporting of cash.*

1. A company has the following assets at the end of the year: cash on hand $40,000, cash refund due from customer $30,000, and checking account balance $22,000. Cash and cash equivalents is therefore $62,000.
2. A company that has received NSF checks should report these checks as a current liability on the balance sheet.
3. Restricted cash that is a current asset is reported as part of cash and cash equivalents.
4. A company has cash in the bank of $50,000, petty cash of $400, and stock investments of $100,000. Total cash and cash equivalents is therefore $50,400.

## Exercises

**E8.1 (LO 1)** Eve Herschel is the owner of Herschel's Pizza. Herschel's is operated strictly on a carryout basis. Customers pick up their orders at a counter where a clerk exchanges the pizza for cash. While at the counter, the customer can see other employees making the pizzas and the large ovens in which the pizzas are baked.

*Identify the principles of internal control.*

### Instructions

Identify the six principles of internal control and give an example of each principle that you might observe when picking up your pizza. (*Note:* It may not be possible to observe all the principles.)

**E8.2 (LO 1, 2)** The following control procedures are used at Torres Company for over-the-counter cash receipts.

*Identify internal control weaknesses over cash receipts and suggest improvements.*

1. To minimize the risk of robbery, cash in excess of $100 is stored in an unlocked briefcase in the stock room until it is deposited in the bank.
2. All over-the-counter receipts are processed by three clerks who use a cash register with a single cash drawer.
3. The company accountant makes the bank deposit and then records the day's receipts.
4. At the end of each day, the total receipts are counted by the cashier on duty and reconciled to the cash register total.
5. Cashiers are experienced; they are not bonded.

### Instructions

**a.** For each procedure, explain the weakness in internal control, and identify the control principle that is violated.

**b.** For each weakness, suggest a change in procedure that will result in good internal control.

**E8.3 (LO 1, 2)** The following control procedures are used in Mendy Lang's Boutique Shoppe for cash disbursements.

*Identify internal control weaknesses over cash disbursements and suggest improvements.*

1. The company accountant prepares the bank reconciliation and reports any discrepancies to the owner.
2. The store manager personally approves all payments before signing and issuing checks.
3. Each week, 100 company checks are left in an unmarked envelope on a shelf behind the cash register.
4. After payment, bills are filed in a paid invoice folder.
5. The company checks are unnumbered.

### Instructions

**a.** For each procedure, explain the weakness in internal control, and identify the internal control principle that is violated.

**b.** For each weakness, suggest a change in the procedure that will result in good internal control.

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*Identify internal control weaknesses for cash disbursements and suggest improvements.*

**E8.4 (LO 2)** **Writing** At Danner Company, checks are not prenumbered because both the purchasing agent and the treasurer are authorized to issue checks. Each signer has access to unissued checks kept in an unlocked file cabinet. The purchasing agent pays all bills pertaining to goods purchased for resale. Prior to payment, the purchasing agent determines that the goods have been received and verifies the mathematical accuracy of the vendor's invoice. After payment, the invoice is filed by the vendor name, and the purchasing agent records the payment. The treasurer pays all other bills following approval by authorized employees. After payment, the treasurer stamps all bills PAID, files them by payment date, and records the checks in the cash disbursements journal. Danner Company maintains one checking account that is reconciled by the treasurer.

**Instructions**

**a.** List the weaknesses in internal control over cash disbursements.

**b.** Write a memo to the company treasurer indicating your recommendations for improvement.

*Indicate whether procedure is good or weak internal control.*

**E8.5 (LO 1, 2)** Listed below are five procedures followed by Eikenberry Company.

**1.** Several individuals operate the cash register using the same register drawer.

**2.** A monthly bank reconciliation is prepared by someone who has no other cash responsibilities.

**3.** Joe Cockrell writes checks and also records cash payment entries.

**4.** One individual orders inventory, while a different individual authorizes payments.

**5.** Unnumbered sales invoices from credit sales are forwarded to the accounting department every four weeks for recording.

**Instructions**

Indicate whether each procedure is an example of good internal control or of weak internal control. If it is an example of good internal control, indicate which internal control principle is being followed. If it is an example of weak internal control, indicate which internal control principle is violated. Use the table below.

| Procedure | IC Good or Weak? | Related Internal Control Principle |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

*Indicate whether procedure is good or weak internal control.*

**E8.6 (LO 1, 2)** Listed below are five procedures followed by Gilmore Company.

**1.** Employees are required to take vacations.

**2.** Any member of the sales department can approve credit sales.

**3.** Paul Jaggard ships goods to customers, bills customers, and receives payment from customers.

**4.** Total cash receipts are compared to bank deposits daily by someone who has no other cash responsibilities.

**5.** Time clocks are used for recording time worked by employees.

**Instructions**

Indicate whether each procedure is an example of good internal control or of weak internal control. If it is an example of good internal control, indicate which internal control principle is being followed. If it is an example of weak internal control, indicate which internal control principle is violated. Use the table below.

| Procedure | IC Good or Weak? | Related Internal Control Principle |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

*Prepare journal entries for a petty cash fund.*

**E8.7 (LO 2)** Setterstrom Company established a petty cash fund on May 1, cashing a check for $100. The company reimbursed the fund on June 1 and July 1 with the following results.

June 1: Cash in fund $1.75. Receipts: delivery expense $31.25, postage expense $39.00, and miscellaneous expense $25.00.

July 1: Cash in fund $3.25. Receipts: delivery expense $21.00, entertainment expense $51.00, and miscellaneous expense $24.75.

On July 10, Setterstrom increased the fund from $100 to $130.

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**Instructions**

Prepare journal entries for Setterstrom Company for May 1, June 1, July 1, and July 10.

**E8.8 (LO 2)** Horvath Company uses an imprest petty cash system. The fund was established on March 1 with a balance of $100. During March, the following petty cash receipts were found in the petty cash box.

*Prepare journal entries for a petty cash fund.*

| Date | Receipt No. | For | Amount |
|---|---|---|---|
| 3/5 | 1 | Stamp Inventory | $39 |
| 7 | 2 | Freight-Out | 21 |
| 9 | 3 | Miscellaneous Expense | 6 |
| 11 | 4 | Travel Expense | 24 |
| 14 | 5 | Miscellaneous Expense | 5 |

The fund was replenished on March 15 when the fund contained $2 in cash. On March 20, the amount in the fund was increased to $175.

**Instructions**

Journalize the entries in March that pertain to the operation of the petty cash fund.

**E8.9 (LO 3)** Don Wyatt is unable to reconcile the bank balance at January 31. Don's reconciliation is as follows.

*Prepare bank reconciliation and adjusting entries.*

| | |
|---|---|
| Cash balance per bank | $3,560.20 |
| Add: NSF check | 490.00 |
| Less: Bank service charge | 25.00 |
| Adjusted balance per bank | $4,025.20 |
| | |
| Cash balance per books | $3,875.20 |
| Less: Deposits in transit | 530.00 |
| Add: Outstanding checks | 730.00 |
| Adjusted balance per books | $4,075.20 |

**Instructions**

**a.** Prepare a correct bank reconciliation.

**b.** Journalize the entries required by the reconciliation.

**E8.10 (LO 3)** On April 30, the bank reconciliation of Westbrook Company shows three outstanding checks: no. 254, $650; no. 255, $620; and no. 257, $410. The May bank statement and the May cash payments journal show the following.

*Determine outstanding checks.*

**Bank Statement**
**Checks Paid**

| Date | Check No. | Amount |
|---|---|---|
| 5/4 | 254 | $650 |
| 5/2 | 257 | 410 |
| 5/17 | 258 | 159 |
| 5/12 | 259 | 275 |
| 5/20 | 261 | 500 |
| 5/29 | 263 | 480 |
| 5/30 | 262 | 750 |

**Cash Payments Journal**
**Checks Issued**

| Date | Check No. | Amount |
|---|---|---|
| 5/2 | 258 | $159 |
| 5/5 | 259 | 275 |
| 5/10 | 260 | 890 |
| 5/15 | 261 | 500 |
| 5/22 | 262 | 750 |
| 5/24 | 263 | 480 |
| 5/29 | 264 | 560 |

**Instructions**

Using Step 2 in the reconciliation procedure, list the outstanding checks at May 31.

**E8.11 (LO 3)** The following information pertains to Crane Video Company.

*Prepare bank reconciliation and adjusting entries.*

**1.** Cash balance per bank, July 31, $7,263.

**2.** July bank service charge not recorded by the depositor $28.

**3.** Cash balance per books, July 31, $7,284.

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4. Deposits in transit, July 31, $1,300.
5. Bank collected $700 note for Crane in July, plus interest $36, less fee $20. The collection has not been recorded by Crane, and no interest has been accrued.
6. Outstanding checks, July 31, $591.

**Instructions**

**a.** Prepare a bank reconciliation at July 31.

**b.** Journalize the adjusting entries at July 31 on the books of Crane Video Company.

*Prepare bank reconciliation and adjusting entries.*

**E8.12 (LO 3)** The information below relates to the Cash account in the ledger of Minton Company.

Balance September 1—$17,150; Cash deposited—$64,000.
Balance September 30—$17,404; Checks written—$63,746.

The September bank statement shows a balance of $16,422 on September 30 and the following memoranda.

| Credits | | Debits | |
|---|---|---|---|
| Collection of $2,500 note plus interest $30 | $2,530 | NSF check: Richard Nance | $425 |
| Interest earned on checking account | $45 | Safety deposit box rent | $65 |

At September 30, deposits in transit were $5,450, and outstanding checks totaled $2,383.

**Instructions**

**a.** Prepare the bank reconciliation at September 30.

**b.** Prepare the adjusting entries at September 30, assuming (1) the NSF check was from a customer on account, and (2) no interest had been accrued on the note.

*Compute deposits in transit and outstanding checks for two bank reconciliations.*

**E8.13 (LO 3)** The cash records of Dawes Company show the following four situations.

For July:

1. The June 30 bank reconciliation indicated that deposits in transit total $920. During July, the general ledger account Cash shows deposits of $15,750, but the bank statement indicates that only $15,600 in deposits were received during the month.
2. The June 30 bank reconciliation also reported outstanding checks of $680. During the month of July, Dawes Company's books show that $17,200 of checks were issued. The bank statement showed that $16,400 of checks cleared the bank in July.

For September:

3. In September, deposits per the bank statement totaled $26,700, deposits per books were $26,400, and deposits in transit at September 30 were $2,100.
4. In September, cash disbursements per books were $23,700, checks clearing the bank were $25,000, and outstanding checks at September 30 were $2,100.

There were no bank debit or credit memoranda. No errors were made by either the bank or Dawes Company.

**Instructions**

Answer the following questions.

**a.** In situation (1), what were the deposits in transit at July 31?

**b.** In situation (2), what were the outstanding checks at July 31?

**c.** In situation (3), what were the deposits in transit at August 31?

**d.** In situation (4), what were the outstanding checks at August 31?

*Show presentation of cash in financial statements.*

**E8.14 (LO 4)** **Financial Statement** Wynn Company has recorded the following items in its financial records.

| | |
|---|---|
| Cash in bank | $ 42,000 |
| Cash in plant expansion fund | 100,000 |
| Cash on hand | 12,000 |
| Highly liquid investments | 34,000 |
| Petty cash | 500 |
| Receivables from customers | 89,000 |
| Stock investments | 61,000 |

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The highly liquid investments had maturities of 3 months or less when they were purchased. The stock investments will be sold in the next 6 to 12 months. The plant expansion project will begin in 3 years.

### Instructions

**a.** What amount should Wynn report as "Cash and cash equivalents" on its balance sheet?

**b.** Where should the items not included in part (a) be reported on the balance sheet?

**E8.15 (LO 4)** A new accountant at Wyne Inc. is trying to identify which of the amounts shown below should be reported as the current asset "Cash and cash equivalents" in the year-end balance sheet, as of April 30, 2020.

*Identify reporting of cash.*

**1.** $60 of currency and coin in a locked box used for incidental cash transactions.

**2.** A $10,000 U.S. Treasury bill, due May 31, 2020.

**3.** $260 of April-dated checks that Wyne has received from customers but not yet deposited.

**4.** An $85 check received from a customer in payment of its April account, but postdated to May 1.

**5.** $2,500 in the company's checking account.

**6.** $4,800 in its savings account.

**7.** $75 of prepaid postage in its postage meter.

**8.** A $25 IOU from the company receptionist.

### Instructions

**a.** What balance should Wyne report as its "Cash and cash equivalents" balance at April 30, 2020?

**b.** In what account(s) and in what financial statement(s) should the items not included in "Cash and cash equivalents" be reported?

## Problems: Set A

**P8.1A (LO 1, 2)** Bolz Office Supply Company recently changed its system of internal control over cash disbursements. The system includes the following features.

*Identify internal control principles over cash disbursements.*

Instead of being unnumbered and manually prepared, all checks must now be prenumbered and prepared by using the new accounts payable software purchased by the company. Before a check can be issued, each invoice must have the approval of Kathy Moon, the purchasing agent, and Robin Self, the receiving department supervisor. Checks must be signed by either Jennifer Edwards, the treasurer, or Rich Woodruff, the assistant treasurer. Before signing a check, the signer is expected to compare the amount of the check with the amount on the invoice.

After signing a check, the signer stamps the invoice PAID and inserts within the stamp, the date, check number, and amount of the check. The "paid" invoice is then sent to the accounting department for recording.

Blank checks are stored in a safe in the treasurer's office. The combination to the safe is known only by the treasurer and assistant treasurer. Each month, the bank statement is reconciled with the bank balance per books by the assistant chief accountant. All employees who handle or account for cash are bonded.

### Instructions

Identify the internal control principles and their application to cash disbursements of Bolz Office Supply Company.

**P8.2A (LO 1, 2)** Rondelli Middle School wants to raise money for a new sound system for its auditorium. The primary fund-raising event is a dance at which the famous disc jockey D.J. Sound will play classic and not-so-classic dance tunes. Matt Ballester, the music and theater instructor, has been given the responsibility for coordinating the fund-raising efforts. This is Matt's first experience with fund-raising. He decides to put the eighth-grade choir in charge of the event; he will be a relatively passive observer.

*Identify internal control weaknesses in cash receipts and cash disbursements.*

Matt had 500 unnumbered tickets printed for the dance. He left the tickets in a box on his desk and told the choir students to take as many tickets as they thought they could sell for $5 each. In order to

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ensure that no extra tickets would be floating around, he told them to dispose of any unsold tickets. When the students received payment for the tickets, they were to bring the cash back to Matt and he would put it in a locked box in his desk drawer.

Some of the students were responsible for decorating the gymnasium for the dance. Matt gave each of them a key to the money box and told them that if they took money out to purchase materials, they should put a note in the box saying how much they took and what it was used for. After 2 weeks the money box appeared to be getting full, so Matt asked Jeff Kenney to count the money, prepare a deposit slip, and deposit the money in a bank account Matt had opened.

The day of the dance, Matt wrote a check from the account to pay the DJ. D.J. Sound, however, said that he accepted only cash and did not give receipts. So Matt took $200 out of the cash box and gave it to D.J. At the dance, Matt had Sam Copper working at the entrance to the gymnasium, collecting tickets from students, and selling tickets to those who had not prepurchased them. Matt estimated that 400 students attended the dance.

The following day, Matt closed out the bank account, which had $250 in it, and gave that amount plus the $180 in the cash box to Principal Finke. Principal Finke seemed surprised that, after generating roughly $2,000 in sales, the dance netted only $430 in cash. Matt did not know how to respond.

### Instructions

Identify as many internal control weaknesses as you can in this scenario, and suggest how each could be addressed.

*Journalize and post petty cash fund transactions.*

**P8.3A (LO 2)** Kael Company maintains a petty cash fund for small expenditures. These transactions occurred during the month of August.

| | | |
|---|---|---|
| Aug. | 1 | Established the petty cash fund by writing a check payable to the petty cash custodian for $200. |
| | 15 | Replenished the petty cash fund by writing a check for $175. On this date, the fund consisted of $25 in cash and these petty cash receipts: freight-out $74.40, entertainment expense $36, postage expense $33.70, and miscellaneous expense $27.50. |
| | 16 | Increased the amount of the petty cash fund to $400 by writing a check for $200. |
| | 31 | Replenished the petty cash fund by writing a check for $283. On this date, the fund consisted of $117 in cash and these petty cash receipts: postage expense $145, entertainment expense $90.60, and freight-out $46.40. |

### Instructions

**a.** Journalize the petty cash transactions.

**b.** Post to the Petty Cash account.

**c.** What internal control features exist in a petty cash fund?

*Prepare a bank reconciliation and adjusting entries.*

**P8.4A (LO 3)** On July 31, 2020, Keeds Company had a cash balance per books of $6,140. The statement from Dakota State Bank on that date showed a balance of $7,690.80. A comparison of the bank statement with the Cash account revealed the following facts.

1. The bank service charge for July was $25.
2. The bank collected $1,520 for Keeds Company through electronic funds transfer.
3. The July 31 receipts of $1,193.30 were not included in the bank deposits for July. These receipts were deposited by the company in a night deposit vault on July 31.
4. Company check No. 2480 issued to L. Taylor, a creditor, for $384 that cleared the bank in July was incorrectly entered as a cash payment on July 10 for $348.
5. Checks outstanding on July 31 totaled $1,860.10.
6. On July 31, the bank statement showed an NSF charge of $575 for a check received by the company from W. Krueger, a customer, on account.

### Instructions

a. Adjusted cash bal. $7,024.00

**a.** Prepare the bank reconciliation as of July 31.

**b.** Prepare the necessary adjusting entries at July 31.

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**P8.5A (LO 3)** The bank portion of the bank reconciliation for Langer Company at November 30, 2020, was as follows.

*Prepare a bank reconciliation and adjusting entries from detailed data.*

**Langer Company**
**Bank Reconciliation**
**November 30, 2020**

| | | |
|---|---|---|
| Cash balance per bank | | $14,367.90 |
| Add: Deposits in transit | | 2,530.20 |
| | | 16,898.10 |
| Less: Outstanding checks | | |
| Check Number | Check Amount | |
| 3451 | $2,260.40 | |
| 3470 | 720.10 | |
| 3471 | 844.50 | |
| 3472 | 1,426.80 | |
| 3474 | 1,050.00 | 6,301.80 |
| Adjusted cash balance per bank | | $10,596.30 |

The adjusted cash balance per bank agreed with the cash balance per books at November 30.

The December bank statement showed the following checks and deposits.

**Bank Statement**

| Checks | | | Deposits | |
|---|---|---|---|---|
| **Date** | **Number** | **Amount** | **Date** | **Amount** |
| 12-1 | 3451 | $ 2,260.40 | 12-1 | $ 2,530.20 |
| 12-2 | 3471 | 844.50 | 12-4 | 1,211.60 |
| 12-7 | 3472 | 1,426.80 | 12-8 | 2,365.10 |
| 12-4 | 3475 | 1,640.70 | 12-16 | 2,672.70 |
| 12-8 | 3476 | 1,300.00 | 12-21 | 2,945.00 |
| 12-10 | 3477 | 2,130.00 | 12-26 | 2,567.30 |
| 12-15 | 3479 | 3,080.00 | 12-29 | 2,836.00 |
| 12-27 | 3480 | 600.00 | 12-30 | 1,025.00 |
| 12-30 | 3482 | 475.50 | Total | $18,152.90 |
| 12-29 | 3483 | 1,140.00 | | |
| 12-31 | 3485 | 540.80 | | |
| | Total | $15,438.70 | | |

The cash records per books for December showed the following.

**Cash Payments Journal**

| Date | Number | Amount | Date | Number | Amount |
|---|---|---|---|---|---|
| 12-1 | 3475 | $1,640.70 | 12-20 | 3482 | $ 475.50 |
| 12-2 | 3476 | 1,300.00 | 12-22 | 3483 | 1,140.00 |
| 12-2 | 3477 | 2,130.00 | 12-23 | 3484 | 798.00 |
| 12-4 | 3478 | 621.30 | 12-24 | 3485 | 450.80 |
| 12-8 | 3479 | 3,080.00 | 12-30 | 3486 | 889.50 |
| 12-10 | 3480 | 600.00 | Total | | $13,933.20 |
| 12-17 | 3481 | 807.40 | | | |

**Cash Receipts Journal**

| Date | Amount |
|---|---|
| 12-3 | $ 1,211.60 |
| 12-7 | 2,365.10 |
| 12-15 | 2,672.70 |
| 12-20 | 2,954.00 |
| 12-25 | 2,567.30 |
| 12-28 | 2,836.00 |
| 12-30 | 1,025.00 |
| 12-31 | 1,690.40 |
| Total | $17,322.10 |

The bank statement contained two memoranda:

1. A credit of $2,242 for the collection of Langer Company of an electronic funds transfer.
2. A debit for the printing of additional company checks $85.

At December 31, the cash balance per books was $13,985.20, and the cash balance per the bank statement was $19,239.10. The bank did not make any errors, but **Langer Company made two errors**.

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**Instructions**

a. Adjusted balance per books $16,043.20

**a.** Using the steps in the reconciliation procedure described in the chapter, prepare a bank reconciliation at December 31, 2020.

**b.** Prepare the adjusting entries based on the reconciliation. (*Hint:* The correction of any errors pertaining to recording checks should be made to Accounts Payable. The correction of any errors relating to recording cash receipts should be made to Accounts Receivable.)

*Prepare a bank reconciliation and adjusting entries.*

**P8.6A (LO 3)** Timmins Company of Emporia, Kansas, spreads herbicides and applies liquid fertilizer for local farmers. On May 31, 2020, the company's Cash account per its general ledger showed a balance of $6,738.90.

The bank statement from Emporia State Bank on that date showed the following balance.

**Emporia State Bank**

| Checks and Debits | Deposits and Credits | Daily Balance |
|---|---|---|
| XXX | XXX | 5-31 6,968.00 |

A comparison of the details on the bank statement with the details in the Cash account revealed the following facts.

1. The statement included a debit memo of $40 for the printing of additional company checks.
2. Cash sales of $883.15 on May 12 were deposited in the bank. The cash receipts entry and the deposit slip were incorrectly made for $933.15. The bank credited Timmins Company for the correct amount.
3. Outstanding checks at May 31 totaled $276.25, and deposits in transit were $1,880.15.
4. On May 18, the company issued check No. 1181 for $685 to H. Moses, on account. The check, which cleared the bank in May, was incorrectly journalized and posted by Timmins Company for $658.
5. $2,690 was collected by the bank for Timmins Company on May 31 through electronic funds transfer.
6. Included with the canceled checks was a check issued by Tomins Company to C. Pernod for $360 that was incorrectly charged to Timmins Company by the bank.
7. On May 31, the bank statement showed an NSF charge of $380 for a check issued by Sara Ballard, a customer, to Timmins Company on account.

**Instructions**

a. Adjusted cash bal. $8,931.90

**a.** Prepare the bank reconciliation at May 31, 2020.

**b.** Prepare the necessary adjusting entries for Timmins Company at May 31, 2020.

*Prepare a comprehensive bank reconciliation with theft and internal control deficiencies.*

**P8.7A (LO 1, 2, 3)** Daisey Company is a very profitable small business. It has not, however, given much consideration to internal control. For example, in an attempt to keep clerical and office expenses to a minimum, the company has combined the jobs of cashier and bookkeeper. As a result, Bret Turrin handles all cash receipts, keeps the accounting records, and prepares the monthly bank reconciliations.

The balance per the bank statement on October 31, 2020, was $18,380. Outstanding checks were No. 62 for $140.75, No. 183 for $180, No. 284 for $253.25, No. 862 for $190.71, No. 863 for $226.80, and No. 864 for $165.28. Included with the statement was a credit memorandum of $185 indicating the collection of a note receivable for Daisey Company by the bank on October 25. This memorandum has not been recorded by Daisey.

The company's ledger showed one Cash account with a balance of $21,877.72. The balance included undeposited cash on hand. Because of the lack of internal controls, Bret took for personal use all of the undeposited receipts in excess of $3,795.51. He then prepared the following bank reconciliation in an effort to conceal his theft of cash.

| | | |
|---|---|---|
| Cash balance per books, October 31 | | $21,877.72 |
| Add: Outstanding checks | | |
| No. 862 | $190.71 | |
| No. 863 | 226.80 | |
| No. 864 | 165.28 | 482.79 |
| | | 22,360.51 |
| Less: Undeposited receipts | | 3,795.51 |
| Unadjusted balance per bank, October 31 | | 18,565.00 |
| Less: Bank credit memorandum | | 185.00 |
| Cash balance per bank statement, October 31 | | $18,380.00 |

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### Instructions

**a.** Prepare a correct bank reconciliation. (*Hint:* Deduct the amount of the theft from the adjusted balance per books.)

a. Adjusted cash bal. $21,018.72

**b.** Indicate the three ways that Bret attempted to conceal the theft and the dollar amount involved in each method.

**c.** What principles of internal control were violated in this case?

## Continuing Case

### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 6.)

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**CC8 Part 1** Natalie is struggling to keep up with the recording of her accounting transactions. She is spending a lot of time marketing and selling mixers and giving her cookie classes. Her friend John is an accounting student who runs his own accounting service. He has asked Natalie if she would like to have him do her accounting. John and Natalie meet and discuss her business.

**Part 2** Natalie decides that she cannot afford to hire John to do her accounting. One way that she can ensure that her cash account does not have any errors and is accurate and up-to-date is to prepare a bank reconciliation at the end of each month. Natalie would like you to help her.

*Go to* **WileyPLUS** *for complete case details and instructions.*

## Ethics Case

**EC8** You are the assistant controller in charge of general ledger accounting at Linbarger Bottling Company. Your company has a large loan from an insurance company. The loan agreement requires that the company's cash account balance be maintained at $200,000 or more, as reported monthly.

At June 30, the cash balance is $80,000, which you report to Lisa Infante, the financial vice president. Lisa excitedly instructs you to keep the cash receipts book open for one additional day for purposes of the June 30 report to the insurance company. Lisa says, "If we don't get that cash balance over $200,000, we'll default on our loan agreement. They could close us down, put us all out of our jobs!" Lisa continues, "I talked to Oconto Distributors (one of Linbarger's largest customers) this morning. They said they sent us a check for $150,000 yesterday. We should receive it tomorrow. If we include just that one check in our cash balance, we'll be in the clear. It's in the mail!"

### Instructions

**a.** Who will suffer negative effects if you do not comply with Lisa Infante's instructions? Who will suffer if you do comply?

**b.** What are the ethical considerations in this case?

**c.** What alternatives do you have?

## Comprehensive Accounting Cycle Review

**ACR8** On December 1, 2020, Fullerton Company had the following account balances.

| | Debit | | Credit |
|---|---|---|---|
| Cash | $18,200 | Accumulated Depreciation—Equipment | $ 3,000 |
| Notes Receivable | 2,200 | Accounts Payable | 6,100 |
| Accounts Receivable | 7,500 | Owner's Capital | 64,400 |
| Inventory | 16,000 | | $73,500 |
| Prepaid Insurance | 1,600 | | |
| Equipment | 28,000 | | |
| | $73,500 | | |

During December, the company completed the following transactions.

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Dec. 7 Received $3,600 cash from customers in payment of account (no discount allowed).
12 Purchased merchandise on account from Vance Co. $12,000, terms 1/10, n/30.
17 Sold merchandise on account $16,000, terms 2/10, n/30. The cost of the merchandise sold was $10,000.
19 Paid salaries $2,200.
22 Paid Vance Co. in full, less discount.
26 Received collections in full, less discounts, from customers billed on December 17.
31 Received $2,700 cash from customers in payment of account (no discount allowed).

Adjustment data:

1. Depreciation $200 per month.
2. Insurance expired $400.

### Instructions

**a.** Journalize the December transactions. (Assume a perpetual inventory system.)

**b.** Enter the December 1 balances in the ledger T-accounts and post the December transactions. Use Cost of Goods Sold, Depreciation Expense, Insurance Expense, Salaries and Wages Expense, Sales Revenue, and Sales Discounts.

**c.** The statement from Jackson County Bank on December 31 showed a balance of $26,130. A comparison of the bank statement with the Cash account revealed the following facts.

1. The bank collected a note receivable of $2,200 for Fullerton Company on December 15.
2. The December 31 receipts were deposited in a night deposit vault on December 31. These deposits were recorded by the bank in January.
3. Checks outstanding on December 31 totaled $1,210.
4. On December 31, the bank statement showed an NSF charge of $680 for a check received by the company from L. Bryan, a customer, on account.

Prepare a bank reconciliation as of December 31 based on the available information. (*Hint:* The cash balance per books is $26,100. This can be proven by finding the balance in the Cash account from parts (a) and (b).)

**d.** Journalize the adjusting entries resulting from the bank reconciliation and adjustment data.

**e.** Post the adjusting entries to the ledger T-accounts.

**f.** Prepare an adjusted trial balance.

**g.** Prepare an income statement for December and a classified balance sheet at December 31.

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT8.1** The financial statements of **Apple Inc.** are presented in Appendix A at the end of this textbook. The complete annual report, including the notes to the financial statements, is available at the company's website.

### Instructions

**a.** What comments, if any, are made about cash in the "Report of the Independent Registered Public Accounting Firm"?

**b.** What data about cash and cash equivalents are shown in the consolidated balance sheet?

**c.** In its notes to Consolidated Financial Statements, how does Apple define cash equivalents?

**d.** In "Management's Annual Report on Internal Control over Financial Reporting," what does Apple's management say about internal control?

### Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT8.2** **PepsiCo**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

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### Instructions

**a.** Based on the information contained in these financial statements, determine each of the following for each company:

**1.** Cash and cash equivalents balance at December 26, 2015, for PepsiCo and at December 31, 2015, for Coca-Cola.

**2.** Increase (decrease) in cash and cash equivalents from 2014 to 2015.

**3.** Cash provided by operating activities during the year ended December 2015 (from statement of cash flows).

**b.** What conclusions concerning the management of cash can be drawn from these data?

## Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT8.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

### Instructions

**a.** Based on the information contained in these financial statements, determine each of the following for each company:

**1.** Cash and cash equivalents balance at December 31, 2015, for Amazon and at January 31, 2016, for Wal-Mart.

**2.** Increase (decrease) in cash and cash equivalents from 2014 to 2015.

**3.** Net cash provided by operating activities during the year ended December 31, 2015, for Amazon and January 31, 2016, for Wal-Mart from statement of cash flows.

**b.** What conclusions concerning the management of cash can be drawn from these data?

## Real-World Focus

**CT8.4** All organizations should have systems of internal control to combat fraud.

### Instructions

Go to the **Association of Certified Fraud Examiner (ACFE)** website, search "Report to the Nations on Occupational Fraud and Abuse," click **Costs**, and then answer the following questions.

**a.** What is the percent of annual revenues lost to fraud?

**b.** What is the median loss for the United States due to occupational fraud?

**c.** What happens when organizations lack anti-fraud controls?

## Decision-Making Across the Organization

**CT8.5** The board of trustees of a local church is concerned about the internal accounting controls for the offering collections made at weekly services. The trustees ask you to serve on a three-person audit team with the internal auditor of a local college and a CPA who has just joined the church.

At a meeting of the audit team and the board of trustees you learn the following.

**1.** The church's board of trustees has delegated responsibility for the financial management and audit of the financial records to the finance committee. This group prepares the annual budget and approves major disbursements. It is not involved in collections or recordkeeping. No audit has been made in recent years because the same trusted employee has kept church records and served as financial secretary for 15 years. The church does not carry any fidelity insurance.

**2.** The collection at the weekly service is taken by a team of ushers who volunteer to serve one month. The ushers take the collection plates to a basement office at the rear of the church. They hand their plates to the head usher and return to the church service. After all plates have been turned in, the head usher counts the cash received. The head usher then places the cash in the church safe along with a notation of the amount counted. The head usher volunteers to serve for 3 months.

**3.** The next morning the financial secretary opens the safe and recounts the collection. The secretary withholds $150–$200 in cash, depending on the cash expenditures expected for the week, and deposits the remainder of the collections in the bank. To facilitate the deposit, church members who contribute by check are asked to make their checks payable to "Cash."

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4. Each month, the financial secretary reconciles the bank statement and submits a copy of the reconciliation to the board of trustees. The reconciliations have rarely contained any bank errors and have never shown any errors per books.

**Instructions**

With the class divided into groups, answer the following.

a. Indicate the weaknesses in internal accounting control over the handling of collections.

b. List the improvements in internal control procedures that you plan to make at the next meeting of the audit team for (1) the ushers, (2) the head usher, (3) the financial secretary, and (4) the finance committee.

c. What church policies should be changed to improve internal control?

### Communication Activity

**CT8.6** As a new auditor for the CPA firm of Eaton, Quayle, and Hale, you have been assigned to review the internal controls over mail cash receipts of Pritchard Company. Your review reveals the following. Checks are promptly endorsed "For Deposit Only," but no list of the checks is prepared by the person opening the mail. The mail is opened either by the cashier or by the employee who maintains the accounts receivable records. Mail receipts are deposited in the bank weekly by the cashier.

**Instructions**

Write a letter to Danny Peak, owner of Pritchard Company, explaining the weaknesses in internal control and your recommendations for improving the system.

### All About You

**CT8.7** The print and electronic media are full of stories about potential security risks that may arise from your computer or smartphone. It is important to keep in mind, however, that there are also many other ways that your identity can be stolen. The federal government provides many resources to help protect you from identity thieves.

**Instructions**

Search the Internet for and then go to the federal government website on identity theft, and then identify five signs of identity theft.

### FASB Codification Activity

**CT8.8** If your school has a subscription to the FASB Codification, log in and prepare responses to the following.

a. How is cash defined in the Codification?

b. How are cash equivalents defined in the Codification?

c. What are the disclosure requirements related to cash and cash equivalents?

## A Look at IFRS

**LEARNING OBJECTIVE 5**

Compare the accounting for fraud, internal control, and cash under GAAP and IFRS.

Fraud can occur anywhere. Because the three main factors that contribute to fraud are universal in nature, the principles of internal control activities are used globally by companies. While Sarbanes-Oxley

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(SOX) does not apply to international companies, most large international companies have internal controls similar to those indicated in the chapter. IFRS and GAAP are also very similar in accounting for cash. *IAS No. 1 (revised),* "Presentation of Financial Statements," is the only standard that discusses issues specifically related to cash.

## Key Points

Following are the key similarities and differences between GAAP and IFRS related to fraud, internal control, and cash.

### Similarities

- The fraud triangle discussed in this chapter is applicable to all international companies. Some of the major frauds on an international basis are **Parmalat** (Italy), **Royal Ahold** (the Netherlands), and **Satyam Computer Services** (India).
- Rising economic crime poses a growing threat to companies, with nearly one-third of all organizations worldwide being victims of fraud in a recent 12-month period.
- Accounting scandals both in the United States and internationally have re-ignited the debate over the relative merits of GAAP, which takes a "rules-based" approach to accounting, versus IFRS, which takes a "principles-based" approach. The FASB announced that it intends to introduce more principles-based standards.
- On a lighter note, at one time the Ig Nobel Prize in Economics went to the CEOs of those companies involved in the corporate accounting scandals of that year for "adapting the mathematical concept of imaginary numbers for use in the business world." A parody of the Nobel Prizes, the Ig Nobel Prizes (read Ignoble, as not noble) are given each year in early October for 10 achievements that "first make people laugh, and then make them think." Organized by the scientific humor magazine *Annals of Improbable Research* (*AIR*), they are presented by a group that includes genuine Nobel laureates at a ceremony at Harvard University's Sanders Theater.
- Internal controls are a system of checks and balances designed to prevent and detect fraud and errors. While most companies have these systems in place, many have never completely documented them, nor had an independent auditor attest to their effectiveness. Both of these actions are required under SOX.
- Companies find that internal control review is a costly process but badly needed. One study estimates the cost of SOX compliance for U.S. companies at over $35 billion, with audit fees doubling in the first year of compliance. At the same time, examination of internal controls indicates lingering problems in the way companies operate. One study of first compliance with the internal-control testing provisions documented material weaknesses for about 13% of companies reporting in a two-year period (*PricewaterhouseCoopers' Global Economic Crime Survey*, 2005).
- The accounting and internal control procedures related to cash are essentially the same under both IFRS and this textbook. In addition, the definition used for cash equivalents is the same.
- Most companies report cash and cash equivalents together under IFRS, as shown in this textbook. In addition, IFRS follows the same accounting policies related to the reporting of restricted cash.

### Differences

- The SOX internal control standards apply only to companies listed on U.S. exchanges. There is continuing debate over whether foreign issuers should have to comply with this extra layer of regulation.

## Looking to the Future

Ethics has become a very important aspect of reporting. Different cultures have different perspectives on bribery and other questionable activities, and consequently penalties for engaging in such activities vary considerably across countries.

High-quality international accounting requires both high-quality accounting standards and high-quality auditing. Similar to the convergence of GAAP and IFRS, there is movement to improve international auditing standards. The International Auditing and Assurance Standards Board (IAASB) functions as an independent standard-setting body. It works to establish high-quality auditing and assurance and quality-control standards throughout the world. Whether the IAASB adopts internal control provisions similar to those in SOX remains to be seen. You can follow developments in the international audit arena at the IAASB website.

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## IFRS Practice

### IFRS Self-Test Questions

1. Non-U.S companies that follow IFRS:
   - **a.** do not normally use the principles of internal control activities described in this textbook.
   - **b.** often offset cash with accounts payable on the balance sheet.
   - **c.** are not required to follow SOX.
   - **d.** None of the above.
2. The Sarbanes-Oxley Act applies to:
   - **a.** all U.S. companies listed on U.S. exchanges.
   - **b.** all companies that list stock on any stock exchange in any country.
   - **c.** all European companies listed on European exchanges.
   - **d.** Both (a) and (c).
3. High-quality international accounting requires both high-quality accounting standards and:
   - **a.** a reconsideration of SOX to make it less onerous.
   - **b.** high-quality auditing standards.
   - **c.** government intervention to ensure that the public interest is protected.
   - **d.** the development of new principles of internal control activities.

### IFRS Exercise

**IFRS8.1** Some people argue that the internal control requirements of the Sarbanes-Oxley Act (SOX) put U.S. companies at a competitive disadvantage to companies outside the United States. Discuss the competitive implications (both pros and cons) of SOX.

### International Financial Reporting Problem: Louis Vuitton

**IFRS8.2** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

#### Instructions

Using the notes to the company's financial statements, what are Louis Vuitton's accounting policies related to cash and cash equivalents?

#### Answers to IFRS Self-Test Questions

**1.** c **2.** a **3.** b

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# Accounting for Receivables

## Chapter Preview

As indicated in the following Feature Story, receivables are a significant asset for many pharmaceutical companies. Because a large portion of sales in the United States are credit sales, receivables are important to companies in other industries as well. As a consequence, companies must pay close attention to their receivables and manage them carefully. In this chapter, you will learn what journal entries companies make when they sell products, when they collect cash from those sales, and when they write off accounts they cannot collect.

## Feature Story

### A Dose of Careful Management Keeps Receivables Healthy

"Sometimes you have to know when to be very tough, and sometimes you can give them a bit of a break," said Vivi Su. She wasn't talking about her children but about the customers of a subsidiary of former pharmaceutical company **Whitehall-Robins**, where she worked as supervisor of credit and collections.

For example, while the company's regular terms were 1/15, n/30 (1% discount if paid within 15 days), a customer might have asked for and received a few days of grace and still got the discount. Or a customer might have placed orders above its credit limit, in which case, depending on its payment history and the circumstances, Ms. Su might have authorized shipment of the goods anyway.

"It's not about drawing a line in the sand, and that's all," she explained. "You want a good relationship with your customers—but you also need to bring in the money."

"The money," in Whitehall-Robins' case, amounted to some $170 million in sales a year. Nearly all of it came in through the credit accounts Ms. Su managed. The process started with the decision to grant a customer an account in the

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first place. The sales rep gave the customer a credit application. "My department reviews this application very carefully; a customer needs to supply three good references, and we also run a check with a credit firm like **Equifax**. If we accept them, then based on their size and history, we assign a credit limit," Ms. Su explained.

Once accounts were established, "I get an aging report every single day," said Ms. Su. "The rule of thumb is that we should always have at least 85% of receivables current—meaning they were billed less than 30 days ago," she continued. "But we try to do even better than that—I like to see 90%."

At 15 days overdue, Whitehall-Robins phoned the client. After 45 days, Ms. Su noted, "I send a letter. Then a second notice is sent in writing. After the third and final notice, the client has 10 days to pay, and then I hand it over to a collection agency, and it's out of my hands."

Ms. Su's boss, Terry Norton, recorded an estimate for bad debts every year, based on a percentage of receivables. The percentage depended on the current aging history. He also calculated and monitored the company's accounts receivable turnover, which the company reported in its financial statements.

Ms. Su knew that she and Mr. Norton were crucial to the profitability of Whitehall-Robins. "Receivables are generally the second-largest asset of any company (after its capital assets)," she pointed out. "So it's no wonder we keep a very close eye on them."

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Explain how companies recognize accounts receivable. | • Types of receivables<br>• Recognizing accounts receivable | **DO IT! 1** Recognizing Accounts Receivable |
| **LO 2** Describe how companies value accounts receivable and record their disposition. | • Valuing accounts receivable<br>• Disposing of accounts receivable | **DO IT! 2a** Bad Debt Expense<br>**2b** Factoring |
| **LO 3** Explain how companies recognize, value, and dispose of notes receivable. | • Determining the maturity date<br>• Computing interest<br>• Recognizing notes receivable<br>• Valuing notes receivable<br>• Disposing of notes receivable | **DO IT! 3** Recognizing Notes Receivable |
| **LO 4** Describe the statement presentation and analysis of receivables. | • Presentation<br>• Analysis | **DO IT! 4** Analysis of Receivables |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

# Recognition of Accounts Receivable

### LEARNING OBJECTIVE 1

Explain how companies recognize accounts receivable.

The term **receivables** refers to amounts due from individuals and companies. Receivables are claims that are expected to be collected in cash. The management of receivables is a very important activity for any company that sells goods or services on credit.

Receivables are important because they represent one of a company's most liquid assets. For many companies, receivables are also one of the largest assets. For example, receivables represent 13.7% of the current assets of pharmaceutical giant **Rite Aid**. **Illustration 9.1** lists receivables as a percentage of total assets for five other well-known companies in a recent year.

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| Company | Receivables as a Percentage of Total Assets |
|---|---|
| Ford Motor Company | 43.2% |
| General Electric | 41.5 |
| Minnesota Mining and Manufacturing Company (3M) | 12.7 |
| DuPont Co. | 11.7 |
| Intel Corporation | 3.9 |

**ILLUSTRATION 9.1**
**Receivables as a percentage of assets**

## Types of Receivables

The relative significance of a company's receivables as a percentage of its assets depends on various factors: its industry, the time of year, whether it extends long-term financing, and its credit policies. To reflect important differences among receivables, they are frequently classified as (1) accounts receivable, (2) notes receivable, and (3) other receivables.

**Accounts receivable** are amounts customers owe on account. They result from the sale of goods and services. Companies generally expect to collect accounts receivable within 30 to 60 days. They are usually the most significant type of claim held by a company.

**Notes receivable** are a written promise (as evidenced by a formal instrument) for amounts to be received. The note normally requires the collection of interest and extends for time periods of 60–90 days or longer. Notes and accounts receivable that result from sales transactions are often called **trade receivables**.

**Other receivables** include nontrade receivables such as interest receivable, loans to company officers, advances to employees, and income taxes refundable (see **Ethics Note**). These do not generally result from the operations of the business. Therefore, they are generally classified and reported as separate items in the balance sheet.

**ETHICS NOTE**
**Companies report receivables from employees separately in the financial statements. The reason: Sometimes these receivables are not the result of an "arm's-length" transaction.**

## Recognizing Accounts Receivable

Recognizing accounts receivable is relatively straightforward. A service organization records a receivable when it performs service on account. A merchandiser records accounts receivable at the point of sale of merchandise on account. When a merchandiser sells goods, it increases (debits) Accounts Receivable and increases (credits) Sales Revenue.

The seller may offer terms that encourage early payment by providing a discount. Sales returns also reduce receivables. The buyer might find some of the goods unacceptable and choose to return the unwanted goods.

To review, assume that Jordache Co. on July 1, 2020, sells merchandise on account to Polo Company for $1,000, terms 2/10, n/30. On July 5, Polo returns merchandise with a sales price of $100 to Jordache Co. On July 11, Jordache receives payment from Polo Company for the balance due. The journal entries to record these transactions on the books of Jordache Co. are as follows (see **Helpful Hint**). **(Cost of goods sold entries are omitted.)**

**HELPFUL HINT**
**These entries are the same as those described in Chapter 5. For simplicity, we have omitted inventory and cost of goods sold from this set of journal entries and from end-of-chapter material.**

| | | | |
|---|---|---|---|
| July 1 | Accounts Receivable | 1,000 | |
| | Sales Revenue | | 1,000 |
| | (To record sales on account) | | |
| July 5 | Sales Returns and Allowances | 100 | |
| | Accounts Receivable | | 100 |
| | (To record merchandise returned) | | |
| July 11 | Cash ($900 − $18) | 882 | |
| | Sales Discounts ($900 × .02) | 18 | |
| | Accounts Receivable | | 900 |
| | (To record collection of accounts receivable) | | |

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Some retailers issue their own credit cards. When you use a retailer's credit card (**JCPenney**, for example), the retailer charges interest on the balance due if not paid within a specified period (usually 25–30 days).

To illustrate, assume that you use your JCPenney Company credit card to purchase clothing with a sales price of $300 on June 1, 2020. JCPenney will increase (debit) Accounts Receivable for $300 and increase (credit) Sales Revenue for $300 (cost of goods sold entry omitted) as follows.

A = L + OE
+300
+300 Rev

**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| June 1 | Accounts Receivable | 300 | |
| | Sales Revenue | | 300 |
| | (To record sale of merchandise) | | |

Assuming that you owe $300 at the end of the month and JCPenney charges 1.5% per month on the balance due, the adjusting entry that JCPenney makes to record interest revenue of $4.50 ($300 × 1.5%) on June 30 is as follows.

A = L + OE
+4.50
+4.50 Rev

**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| June 30 | Accounts Receivable | 4.50 | |
| | Interest Revenue | | 4.50 |
| | (To record interest on amount due) | | |

Interest revenue is often substantial for many retailers.

## Anatomy of a Fraud

Tasanee was the accounts receivable clerk for a large nonprofit foundation that provided performance and exhibition space for the performing and visual arts. Her responsibilities included activities normally assigned to an accounts receivable clerk, such as recording revenues from various sources (donations, facility rental fees, ticket revenue, and bar receipts). However, she was also responsible for handling all cash and checks from the time they were received until the time she deposited them, as well as preparing the bank reconciliation. Tasanee took advantage of her situation by falsifying bank deposits and bank reconciliations so that she could steal cash from the bar receipts. Since nobody else logged the donations or matched the donation receipts to pledges prior to Tasanee receiving them, she was able to offset the cash that was stolen against donations that she received but didn't record. Her crime was made easier by the fact that her boss, the company's controller, only did a very superficial review of the bank reconciliation and thus didn't notice that some numbers had been cut out from other documents and taped onto the bank reconciliation.

### Total take: $1.5 million

### The Missing Controls

**Segregation of duties.** The foundation should not have allowed an accounts receivable clerk, whose job was to record receivables, to also handle cash, record cash, make deposits, and especially prepare the bank reconciliation.

**Independent internal verification.** The controller was supposed to perform a thorough review of the bank reconciliation. Because he did not, he was terminated from his position.

Source: Adapted from Wells, *Fraud Casebook* (2007), pp. 183–194.

## DO IT! 1 | Recognizing Accounts Receivable

On May 1, Wilton sold merchandise on account to Bates for $50,000, terms 3/15, net 45. On May 4, Bates returns merchandise with a sales price of $2,000. On May 16, Wilton receives payment from Bates for the balance due. Prepare journal entries to record the May transactions on Wilton's books. (You may ignore cost of goods sold entries and explanations.)

**ACTION PLAN**

- Prepare entry to record the receivable and related return.
- Compute the sales discount and related entry.

### Solution

| | | | |
|---|---|---|---|
| May 1 | Accounts Receivable | 50,000 | |
| | Sales Revenue | | 50,000 |
| May 4 | Sales Returns and Allowances | 2,000 | |
| | Accounts Receivable | | 2,000 |
| May 16 | Cash ($48,000 − $1,440) | 46,560 | |
| | Sales Discounts ($48,000 × .03) | 1,440 | |
| | Accounts Receivable | | 48,000 |

Related exercise material: **BE9.1, BE9.2, DO IT! 9.1, E9.1, E9.2, and E9.3.**

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# Valuation and Disposition of Accounts Receivable

**LEARNING OBJECTIVE 2**

Describe how companies value accounts receivable and record their disposition.

## Valuing Accounts Receivable

Once companies record receivables in the accounts, the next question is: How should they report receivables in the financial statements? Companies report accounts receivable on the balance sheet as an asset. But determining the **amount** to report is sometimes difficult because some receivables will become uncollectible.

Each customer must satisfy the credit requirements of the seller before the credit sale is approved. Inevitably, though, some accounts receivable become uncollectible. For example, a customer may not be able to pay because of a decline in its sales revenue due to a downturn in the economy. Similarly, individuals may be laid off from their jobs or faced with unexpected hospital bills. Companies record credit losses as **Bad Debt Expense** (or Uncollectible Accounts Expense) (see **Alternative Terminology**). Such losses are a normal and necessary risk of doing business on a credit basis.

**ALTERNATIVE TERMINOLOGY**

**You will sometimes see *Bad Debt Expense* called *Uncollectible Accounts Expense*.**

When U.S. home prices fell, home foreclosures rose, and the economy slowed as a result of the financial crises of 2008, lenders experienced huge increases in their bad debt expense. For example, during one quarter **Wachovia** (a large U.S. bank now owned by **Wells Fargo**) increased bad debt expense from $108 million to $408 million. Similarly, **American Express** increased its bad debt expense by 70%.

Two methods are used in accounting for uncollectible accounts: (1) the direct write-off method and (2) the allowance method. The following sections explain these methods.

### Direct Write-Off Method For Uncollectible Accounts

Under the **direct write-off method**, when a company determines a particular account to be uncollectible, it charges the loss to Bad Debt Expense. Assume, for example, that Warden Co. writes off as uncollectible M. E. Doran's $200 balance on December 12. Warden's entry is as follows.

| | | | |
|---|---|---|---|
| Dec. 12 | Bad Debt Expense | 200 | |
| | Accounts Receivable | | 200 |
| | (To record write-off of M. E. Doran account) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | −200 Exp |
| −200 | | | | |

**Cash Flows**
no effect

Under this method, Bad Debt Expense will show only **actual losses** from uncollectibles. The company will report accounts receivable at its gross amount.

Use of the direct write-off method can reduce the relevance of both the income statement and the balance sheet. Consider the following example. In 2020, Quick Buck Computer Company decided it could increase its revenues by offering computers to college students without requiring any money down and with no credit-approval process. On campuses across the country, it sold one million computers with a selling price of $800 each. This increased Quick Buck's revenues and receivables by $800 million. The promotion was a huge success! The 2020 balance sheet and income statement looked great. Unfortunately, during 2021, nearly 40% of the customers defaulted on their loans. This made the 2021 income statement and balance sheet look terrible. **Illustration 9.2** shows the effect of these events on the financial statements if the direct write-off method is used.

Under the direct write-off method, companies often record bad debt expense in a period different from the period in which they record the revenue. The method does not attempt to match bad debt expense to sales revenue in the income statement. Nor does the direct write-off method show accounts receivable in the balance sheet at the amount the company actually expects to receive. **Consequently, unless bad debt losses are insignificant, the direct write-off method is not acceptable for financial reporting purposes.**

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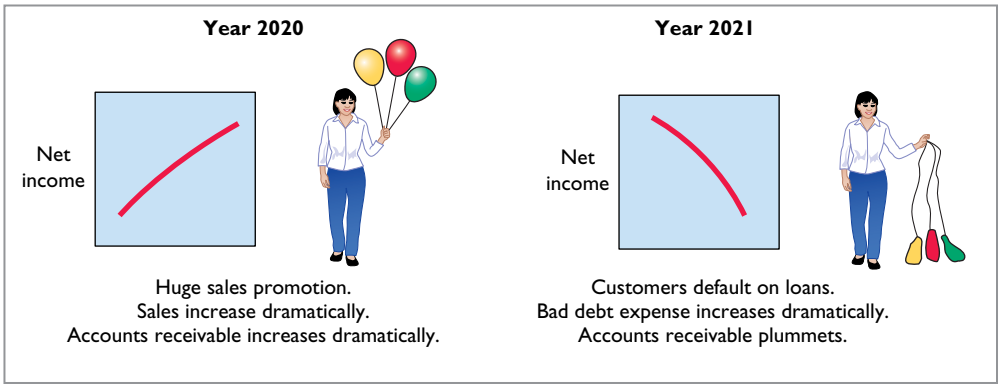
**ILLUSTRATION 9.2**
**Effects of direct write-off method**




## Allowance Method For Uncollectible Accounts

The **allowance method** of accounting for bad debts involves estimating uncollectible accounts at the end of each period. This provides better matching of expenses with revenues on the income statement. It also ensures that companies state receivables on the balance sheet at their cash (net) realizable value. **Cash (net) realizable value** is the net amount the company expects to receive in cash. It excludes amounts that the company estimates it will not collect. Thus, this method reduces receivables in the balance sheet by the amount of estimated uncollectible receivables.

**HELPFUL HINT**
In this context, *material* means significant or important to financial statement users.

**Companies must use the allowance method for financial reporting purposes when bad debts are material in amount** (see Helpful Hint). This method has three essential features:

1. Companies **estimate** uncollectible accounts receivable. They match this estimated expense **against revenues** in the same accounting period in which they record the revenues.
2. Companies debit estimated uncollectibles to Bad Debt Expense and credit them to Allowance for Doubtful Accounts through an adjusting entry at the end of each period. Allowance for Doubtful Accounts is a contra account to Accounts Receivable.
3. When companies write off a specific account, they debit actual uncollectibles to Allowance for Doubtful Accounts and credit that amount to Accounts Receivable.

**Recording Estimated Uncollectibles.** To illustrate the allowance method, assume that Hampson Furniture has credit sales of $1,200,000 in 2020. Of this amount, $200,000 of receivables remains uncollected at December 31. The credit manager estimates that $12,000 of these receivables will be uncollectible. The adjusting entry to record the estimated uncollectibles increases (debits) Bad Debt Expense and increases (credits) Allowance for Doubtful Accounts, as follows.

| | | | |
|---|---|---|---|
| Dec. 31 | Bad Debt Expense | 12,000 | |
| | Allowance for Doubtful Accounts | | 12,000 |
| | (To record estimate of uncollectible accounts) | | |

A = L + OE
−12,000 Exp
−12,000
**Cash Flows**
no effect

Hampson reports Bad Debt Expense in the income statement as an operating expense. Thus, the estimated uncollectibles are matched with sales in 2020. Hampson records the expense in the same year it made the sales.

Allowance for Doubtful Accounts shows the estimated amount of claims on customers that the company expects will become uncollectible in the future. Companies use a contra account instead of a direct credit to Accounts Receivable because they do not know which customers will not pay. The credit balance in the allowance account will absorb the specific write-offs when they occur. As **Illustration 9.3** shows, the company deducts the allowance account from accounts receivable in the current assets section of the balance sheet.

**HELPFUL HINT**
Cash realizable value is sometimes referred to as *accounts receivable (net)*.

The amount of $188,000 in Illustration 9.3 represents the expected **cash realizable value** of the accounts receivable at the statement date (see Helpful Hint). **Companies do not close Allowance for Doubtful Accounts at the end of the fiscal year.**

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**Hampson Furniture**
**Balance Sheet (partial)**

| | | |
|---|---|---|
| Current assets | | |
| Cash | | $ 14,800 |
| Accounts receivable | $200,000 | |
| Less: Allowance for doubtful accounts | 12,000 | 188,000 |
| Inventory | | 310,000 |
| Supplies | | 25,000 |
| Total current assets | | $537,800 |

**ILLUSTRATION 9.3**
**Presentation of allowance for doubtful accounts**

**Recording the Write-Off of an Uncollectible Account.** As described in the Feature Story, companies use various methods of collecting past-due accounts, such as letters, calls, and legal action. When they have exhausted all means of collecting a past-due account and collection appears impossible, the company writes off the account. In the credit card industry, for example, it is standard practice to write off accounts that are 210 days past due. To prevent premature or unauthorized write-offs, authorized management personnel should formally approve each write-off. **To maintain segregation of duties, the employee authorized to write off accounts should not have daily responsibilities related to cash or receivables.**

To illustrate a receivables write-off, assume that the financial vice president of Hampson Furniture authorizes a write-off of the $500 balance owed by R. A. Ware on March 1, 2021. The entry to record the write-off is as follows.

| | | | |
|---|---|---|---|
| Mar. 1 | Allowance for Doubtful Accounts | 500 | |
| | Accounts Receivable | | 500 |
| | (Write-off of R. A. Ware account) | | |

A = L + OE
+500
−500

**Cash Flows**
no effect

The company does not increase bad debt expense when the write-off occurs. **Under the allowance method, companies debit every bad debt write-off to the allowance account rather than to Bad Debt Expense.** A debit to Bad Debt Expense would be incorrect because the company has already recognized the expense when it made the adjusting entry for estimated bad debts. Instead, the entry to record the write-off of an uncollectible account reduces both Accounts Receivable and Allowance for Doubtful Accounts. After posting, the general ledger accounts appear as shown in **Illustration 9.4**.

**Accounts Receivable**

| | | | | | |
|---|---|---|---|---|---|
| Jan. 1 | Bal. | 200,000 | Mar. 1 | | 500 |
| Mar. 1 | Bal. | 199,500 | | | |

**Allowance for Doubtful Accounts**

| | | | | | |
|---|---|---|---|---|---|
| Mar. 1 | | 500 | Jan. 1 | Bal. | 12,000 |
| | | | Mar. 1 | Bal. | 11,500 |

**ILLUSTRATION 9.4**
**General ledger balances after write-off**

A write-off affects **only balance sheet accounts**—not income statement accounts. The write-off of the account reduces both Accounts Receivable and Allowance for Doubtful Accounts. Cash realizable value in the balance sheet, therefore, remains the same, as **Illustration 9.5** shows.

| | Before Write-Off | After Write-Off |
|---|---|---|
| Accounts receivable | $200,000 | $199,500 |
| Allowance for doubtful accounts | 12,000 | 11,500 |
| Cash realizable value | $188,000 | $188,000 |

**ILLUSTRATION 9.5**
**Cash realizable value comparison**

**Recovery of an Uncollectible Account.** Occasionally, a company collects from a customer after it has written off the account as uncollectible. The company makes two entries to record the recovery of a bad debt. (1) It reverses the entry made in writing off the account. This reinstates the customer's account. (2) It journalizes the collection in the usual manner.

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To illustrate, assume that on July 1, R. A. Ware pays the $500 amount that Hampson had written off on March 1. Hampson makes the following entries.

A = L + OE
+500
−500

**Cash Flows**
no effect

(1)

| | | | |
|---|---|---|---|
| July 1 | Accounts Receivable | 500 | |
| | Allowance for Doubtful Accounts | | 500 |
| | (To reverse write-off of R. A. Ware account) | | |

A = L + OE
+500
−500

**Cash Flows**
+500

(2)

| | | | |
|---|---|---|---|
| July 1 | Cash | 500 | |
| | Accounts Receivable | | 500 |
| | (To record collection from R. A. Ware) | | |

Note that the recovery of a bad debt, like the write-off of a bad debt, affects **only balance sheet accounts**. The net effect of the two entries above is a debit to Cash and a credit to Allowance for Doubtful Accounts for $500. Accounts Receivable and Allowance for Doubtful Accounts both increase in entry (1) for two reasons. First, the company made an error in judgment when it wrote off the account receivable. Second, after R. A. Ware did pay, Accounts Receivable in the general ledger and Ware's account in the subsidiary ledger should show the collection for possible future credit purposes.

**Estimating the Allowance.** For Hampson Furniture in Illustration 9.3, the amount of the expected uncollectibles was given. However, in "real life," companies must estimate the amount of expected uncollectible accounts if they use the allowance method. **Illustration 9.6** shows an excerpt from the notes to **Nike**'s financial statements discussing its use of the allowance method.

**ILLUSTRATION 9.6**
**Nike's allowance method disclosure**

Real World

**Nike, Inc.**
**Notes to the Financial Statements**

***Allowance for Uncollectible Accounts Receivable***

We make ongoing estimates relating to the ability to collect our accounts receivable and maintain an allowance for estimated losses resulting from the inability of our customers to make required payments. In determining the amount of the allowance, we consider our historical level of credit losses and make judgments about the creditworthiness of significant customers based on ongoing credit evaluations. Since we cannot predict future changes in the financial stability of our customers, actual future losses from uncollectible accounts may differ from our estimates.

**HELPFUL HINT**
Where appropriate, the percentage-of-receivables basis may use only a single percentage rate.

Frequently, companies estimate the allowance as a percentage of the outstanding receivables. Under the **percentage-of-receivables basis**, management establishes a percentage relationship between the amount of receivables and expected losses from uncollectible accounts (see **Helpful Hint**). For example, suppose Steffen Company has an ending balance in Accounts Receivable of $200,000 and an unadjusted credit balance in Allowance for Doubtful Accounts of $1,500. It estimates that 5% of its accounts receivable will eventually be uncollectible. It should report a balance in Allowance for Doubtful Accounts of $10,000 (.05 × $200,000). To increase the balance in Allowance for Doubtful Accounts from $1,500 to $10,000, the company debits (increases) Bad Debt Expense and credits (increases) Allowance for Doubtful Accounts by $8,500 ($10,000 – $1,500).

**Allowance for Doubtful Accounts**

| | |
|---|---|
| Dec. 31 Unadj. Bal. | 1,500 |
| Dec. 31 Adj. | **8,500** |
| Dec. 31 Bal. | 10,000 |

To more accurately estimate the ending balance in the allowance account, a company often prepares a schedule, called **aging the accounts receivable**. This schedule classifies customer balances by the length of time they have been unpaid.

After the company arranges the accounts by age, it determines the expected bad debt losses by applying percentages, based on past experience, to the totals of each category. The longer a receivable is past due, the less likely it is to be collected. As a result, the estimated percentage of uncollectible debts increases as the number of days past due increases (see **Helpful Hint**). **Illustration 9.7** shows an aging schedule for Dart Company. Note the increasing uncollectible percentages from 2% to 40%.

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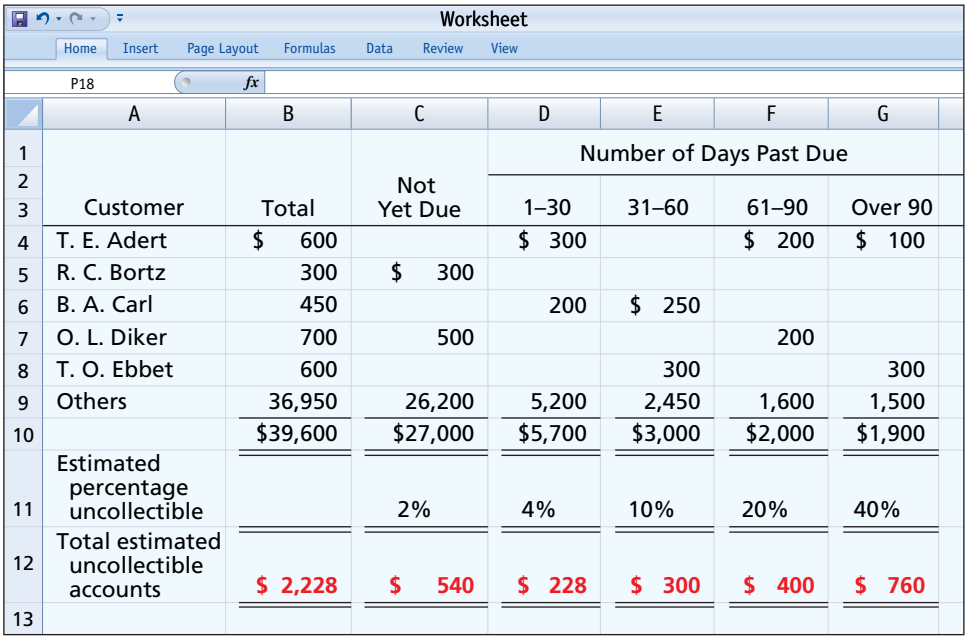


| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | | | | Number of Days Past Due | | | |
| 2 | | | Not | | | | |
| 3 | Customer | Total | Yet Due | 1–30 | 31–60 | 61–90 | Over 90 |
| 4 | T. E. Adert | $ 600 | | $ 300 | | $ 200 | $ 100 |
| 5 | R. C. Bortz | 300 | $ 300 | | | | |
| 6 | B. A. Carl | 450 | | 200 | $ 250 | | |
| 7 | O. L. Diker | 700 | 500 | | | 200 | |
| 8 | T. O. Ebbet | 600 | | | 300 | | 300 |
| 9 | Others | 36,950 | 26,200 | 5,200 | 2,450 | 1,600 | 1,500 |
| 10 | | $39,600 | $27,000 | $5,700 | $3,000 | $2,000 | $1,900 |
| 11 | Estimated percentage uncollectible | | 2% | 4% | 10% | 20% | 40% |
| 12 | Total estimated uncollectible accounts | $ 2,228 | $ 540 | $ 228 | $ 300 | $ 400 | $ 760 |
| 13 | | | | | | | |

**ILLUSTRATION 9.7**
**Aging schedule**

**HELPFUL HINT**
The older categories have higher percentages because the longer an account is past due, the less likely it is to be collected.

Total estimated uncollectible accounts for Dart Company ($2,228) represent the existing customer claims expected to become uncollectible in the future. Thus, this amount represents the **required balance** in Allowance for Doubtful Accounts at the balance sheet date. Accordingly, **the amount of bad debt expense that should be recorded in the adjusting entry is the difference between the required balance and the existing balance in the allowance account**. The existing, unadjusted balance in Allowance for Doubtful Accounts is the net result of the beginning balance (a normal credit balance) less the write-offs of specific accounts during the year (debits to the allowance account).

For example, if the unadjusted trial balance shows Allowance for Doubtful Accounts with a credit balance of $528, then an adjusting entry for $1,700 ($2,228 – $528) is necessary:

| | | | |
|---|---|---|---|
| Dec. 31 | Bad Debt Expense | 1,700 | |
| | Allowance for Doubtful Accounts | | 1,700 |
| | (To adjust allowance account to total estimated uncollectibles) | | |

A = L + OE
−1,700 Exp
−1,700

**Cash Flows**
no effect

After Dart posts the adjusting entry, its accounts appear as shown in **Illustration 9.8**.

**Bad Debt Expense**

| | | |
|---|---|---|
| Dec. 31 | Adj. 1,700 | |

**Allowance for Doubtful Accounts**

| | | |
|---|---|---|
| | Dec. 31 Unadj. Bal. | 528 |
| | Dec. 31 Adj. | 1,700 |
| | Dec. 31 Bal. | 2,228 |

**ILLUSTRATION 9.8**
**Bad debt accounts after posting**

An important aspect of accounts receivable management is simply maintaining a close watch on the accounts. Studies have shown that accounts more than 60 days past due lose approximately 50% of their value if no payment activity occurs within the next 30 days. For each additional 30 days that pass, the collectible value halves once again.

Occasionally, the allowance account will have a **debit balance** prior to adjustment. This occurs because the debits to the allowance account from write-offs during the year **exceeded** the beginning balance in the account which was based on previous estimates for bad debts. In such a case, the company **adds the debit balance to the required balance** when it makes the adjusting entry. Thus, if there was a $500 **debit** balance in the allowance account before

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adjustment, the adjusting entry would be for $2,728 ($2,228 + $500) to arrive at a credit balance of $2,228 as shown below.

A = L + OE
−2,728 Exp
−2,728

**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| Dec. 31 | Bad Debt Expense | 2,728 | |
| | Allowance for Doubtful Accounts | | 2,728 |
| | (To adjust allowance account to total estimated uncollectibles) | | |

After Dart posts the adjusting entry, its accounts appear as shown in **Illustration 9.9**.

**ILLUSTRATION 9.9**
**Bad debt accounts after posting**

| Bad Debt Expense | | | Allowance for Doubtful Accounts | | | |
|---|---|---|---|---|---|---|
| Dec. 31 | Adj. 2,728 | | Dec. 31 Unadj. Bal. 500 | Dec. 31 | Adj. | 2,728 |
| | | | | Dec. 31 | Bal. | 2,228 |

The percentage-of-receivables basis provides an estimate of the cash realizable value of the receivables. It also provides a reasonable matching of expenses to revenue.

The note regarding accounts receivable shown in **Illustration 9.10** comes from the annual report of the shoe company **Skechers USA**.

**ILLUSTRATION 9.10**
**Skechers USA's note disclosure of accounts receivable**

Real World

**Skechers USA**
**Notes to the Financial Statements**

The likelihood of a material loss on an uncollectible account would be mainly dependent on deterioration in the overall economic conditions in a particular country or region. Reserves are fully provided for all probable losses of this nature. For receivables that are not specifically identified as high risk, we provide a reserve based upon our historical loss rate as a percentage of sales. Gross trade accounts receivable were $293.1 million and $241.9 million, and the allowance for bad debts, returns, sales allowances and customer chargebacks were $21.0 million and $15.9 million, at December 31, 2014 and 2013, respectively. Our credit losses charged to expense for the years ended December 31, 2014, 2013 and 2012 were $11.8 million, $2.6 million and $1.5 million, respectively. In addition, we recorded sales return and allowance expense (recoveries) for the years ended December 31, 2014, 2013 and 2012 of $2.3 million, $0.2 million and $(0.4) million, respectively.

## Ethics Insight

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### Cookie Jar Allowances

There are many pressures on companies to achieve earnings targets. For managers, poor earnings can lead to dismissal or lack of promotion. It is not surprising then that management may be tempted to look for ways to boost their earnings number.

One way a company can achieve greater earnings is to lower its estimate of what is needed in its Allowance for Doubtful Accounts (sometimes referred to as "tapping the cookie jar"). For example, suppose a company has an Allowance for Doubtful Accounts of $10 million and decides to reduce this balance to $9 million. As a result of this change, Bad Debt Expense decreases by $1 million and earnings increase by $1 million.

Large banks such as **JP Morgan Chase**, **Wells Fargo**, and **Bank of America** recently decreased their Allowance for Doubtful Accounts by over $4 billion. These reductions came at a time when these big banks were still suffering from lower mortgage lending and trading activity, both of which lead to lower earnings. They justified these reductions in the allowance balances by noting that credit quality and economic conditions had improved. This may be so, but it sure is great to have a cookie jar that might be tapped when a boost in earnings is needed.

**How might investors determine that a company is managing its earnings? (Go to WileyPLUS for this answer and additional questions.)**

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### DO IT! 2a | Bad Debt Expense

Brule Corporation has been in business for 5 years. The unadjusted trial balance at the end of the current year shows Accounts Receivable $30,000, Sales Revenue $180,000, and Allowance for Doubtful Accounts with a debit balance of $2,000. Brule estimates bad debts to be 10% of accounts receivable. Prepare the entry necessary to adjust Allowance for Doubtful Accounts.

**Solution**

Brule should make the following entry to bring the debit balance in Allowance for Doubtful Accounts up to a normal, credit balance of $3,000 (10% × $30,000):

| | | | |
|---|---|---|---|
| | Bad Debt Expense [(10% × $30,000) + $2,000] | 5,000 | |
| | Allowance for Doubtful Accounts | | 5,000 |
| | (To record estimate of uncollectible accounts) | | |

Related exercise material: **BE9.3, BE9.6, DO IT! 9.2a, E9.4, E9.5, E9.6, E9.7, and E9.8.**

**ACTION PLAN**

- Estimate the amount the company does not expect to collect.
- Consider the existing balance in the allowance account when using the percentage-of-receivables basis.
- Report receivables at their cash (net) realizable value—that is, the amount the company expects to collect in cash.

# Disposing of Accounts Receivable

In the normal course of events, companies collect accounts receivable in cash and remove the receivables from the books. However, as credit sales and receivables have grown in significance, the "normal course of events" has changed. Companies now frequently sell their receivables to another company for cash, thereby shortening the cash-to-cash operating cycle.

Companies sell receivables for two major reasons. First, **they may be the only reasonable source of cash**. When money is tight, companies may not be able to borrow money in the usual credit markets. Or if money is available, the cost of borrowing may be prohibitive.

A second reason for selling receivables is that **billing and collection are often time-consuming and costly**. It is often easier for a retailer to sell the receivables to another party with expertise in billing and collection matters. Credit card companies such as **MasterCard**, **Visa**, and **Discover** specialize in billing and collecting accounts receivable.

## Sale of Receivables to a Factor

A common sale of receivables is a sale to a factor. A **factor** is a finance company or bank that buys receivables from businesses and then collects the payments directly from the customers. Factoring is a multibillion dollar business.

Factoring arrangements vary widely. Typically, the factor charges a commission to the company that is selling the receivables. This fee often ranges from 1–3% of the amount of receivables purchased. To illustrate, assume that Hendredon Furniture factors $600,000 of receivables to Federal Factors. Federal Factors assesses a service charge of 2% of the amount of receivables sold. The journal entry to record the sale by Hendredon Furniture on April 2, 2020, is as follows.

| | | | |
|---|---|---|---|
| Apr. 2 | Cash | 588,000 | |
| | Service Charge Expense (2% × $600,000) | 12,000 | |
| | Accounts Receivable | | 600,000 |
| | (To record the sale of accounts receivable) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +588,000 | | | | |
| | | | | −12,000 Exp |
| −600,000 | | | | |

**Cash Flows**
+588,000

If Hendredon often sells its receivables, it records the service charge expense as an operating expense. If the company infrequently sells receivables, it may report this amount in the "Other expenses and losses" section of the income statement.

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## National Credit Card Sales

**ETHICS NOTE**

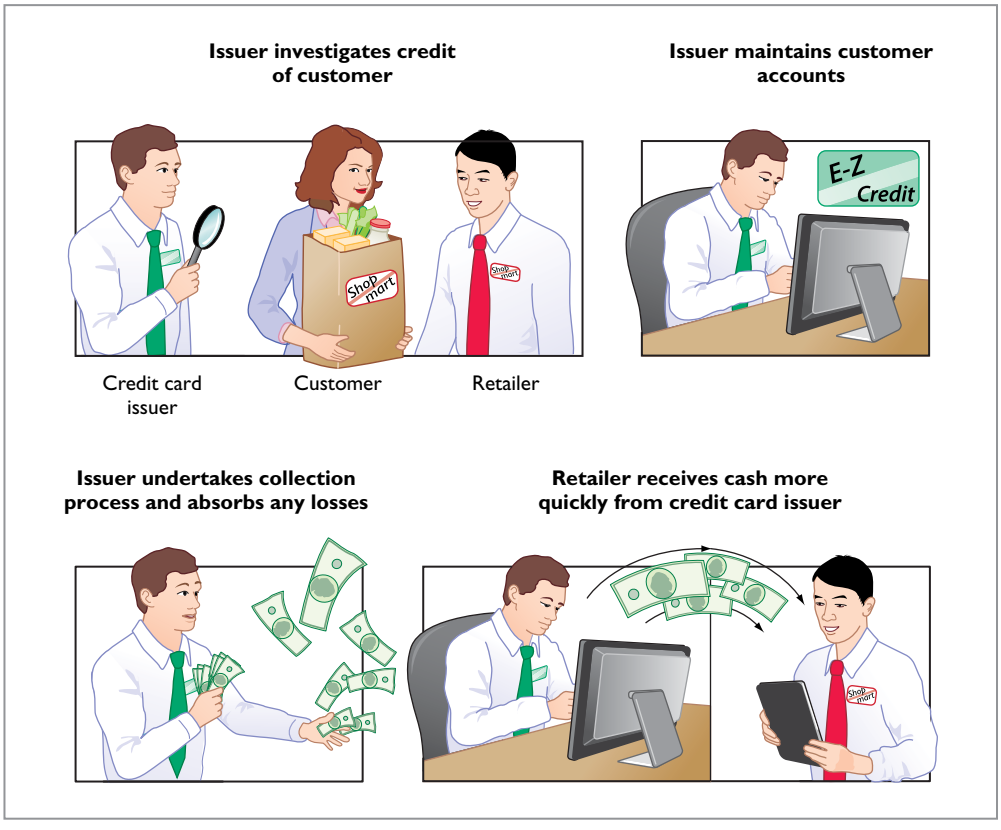
**In exchange for lower interest rates, some companies have eliminated the 25-day grace period before finance charges kick in. Be sure you read the fine print in any credit agreement you sign.**

Over one billion credit cards are in use in the United States—more than three credit cards for every man, woman, and child in this country. **Visa**, **MasterCard**, and **American Express** are the national credit cards that most individuals use. Three parties are involved when national credit cards are used in retail sales: (1) the credit card issuer, who is independent of the retailer; (2) the retailer; and (3) the customer. **A retailer's acceptance of a national credit card is another form of selling (factoring) the receivable.**

Illustration 9.11 shows the major advantages of national credit cards to the retailer. In exchange for these advantages, the retailer pays the credit card issuer a fee of 2–4% of the invoice price for its services (see Ethics Note).

**ILLUSTRATION 9.11**

**Advantages of credit cards to the retailer**




**Accounting for Credit Card Sales.** The retailer generally considers sales from the use of national credit card sales as **cash sales**. The retailer must pay to the bank that issues the card a fee for processing the transactions. The retailer records the credit card slips in a similar manner as checks deposited from a cash sale.

To illustrate, Anita Ferreri purchases $1,000 of compact discs for her restaurant from Karen Kerr Music Co., using her Visa First Bank Card. First Bank charges a service fee of 3%. The entry to record this transaction by Karen Kerr Music on March 22, 2020, is as follows.

A = L + OE
+970
−30 Exp
+1,000 Rev

**Cash Flows**
+970

| | | | |
|---|---|---|---|
| Mar. 22 | Cash | 970 | |
| | Service Charge Expense | 30 | |
| | Sales Revenue | | 1,000 |
| | (To record Visa credit card sales) | | |

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## Accounting Across the Organization Nordstrom

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### How Does a Credit Card Work?

Most of you know how to use a credit card, but do you know what happens in the transaction and how the transaction is processed? Suppose that you use a **Visa** card to purchase some new ties at **Nordstrom**. The customer swipes the credit card (or inserts it if it is a chip card), which allows the information to be read. The salesperson enters the amount of the purchase. The machine contacts the Visa computer, which routes the call back to the bank that issued your Visa card. The issuing bank verifies that the account exists, that the card is not stolen, and that you have not exceeded your credit limit. At this point, the slip is printed, which you sign.

Visa acts as the clearing agent for the transaction. It transfers funds from the issuing bank to Nordstrom's bank account. Generally this transfer of funds, from sale to the receipt of funds in the merchant's account, takes two to three days.

In the meantime, Visa puts a pending charge on your account for the amount of the tie purchase; that amount counts immediately against your available credit limit. At the end of the billing period, Visa sends you an invoice (your credit card bill) which shows the various charges you made, and the amounts that Visa expended on your behalf, for the month. You then must "pay the piper" for your stylish new ties.

**Assume that Nordstrom prepares a bank reconciliation at the end of each month. If some credit card sales have not been processed by the bank, how should Nordstrom treat these transactions on its bank reconciliation? (Go to WileyPLUS for this answer and additional questions.)**

### DO IT! 2b | Factoring

Peter M. Kell Wholesalers Co. needs to raise $120,000 in cash to safely cover next Friday's employee payroll. Kell has reached its debt ceiling. Kell's present balance of outstanding receivables totals $750,000. Kell decides to factor $125,000 of its receivables on September 7, 2020, to alleviate this cash crunch. Record the entry that Kell would make when it raises the needed cash. (Assume a 1% service charge.)

**ACTION PLAN**

- Consider sale of receivables to a factor.
- Weigh cost of factoring against benefit of having cash in hand.

**Solution**

Assuming that Kell Co. factors $125,000 of its accounts receivable at a 1% service charge, it would make this entry:

| | | | |
|---|---|---|---|
| Sept. 7 | Cash | 123,750 | |
| | Service Charge Expense (1% × $125,000) | 1,250 | |
| | Accounts Receivable | | 125,000 |
| | (To record sale of receivables to factor) | | |

Related exercise material: **BE9.7, DO IT! 9.2b, E9.9, E9.10, and E9.11.**

# Notes Receivable

**LEARNING OBJECTIVE 3**

Explain how companies recognize, value, and dispose of notes receivable.

Companies may also grant credit in exchange for a formal credit instrument known as a promissory note. A **promissory note** is a written promise to pay a specified amount of money on demand or at a definite time. Promissory notes may be used (1) when individuals and companies lend or borrow money, (2) when the amount of the transaction and the credit period exceed normal limits, or (3) in settlement of accounts receivable.

In a promissory note, the party making the promise to pay is called the **maker**. The party to whom payment is to be made is called the **payee**. The note may specifically identify the payee by name or may designate the payee simply as the bearer of the note.

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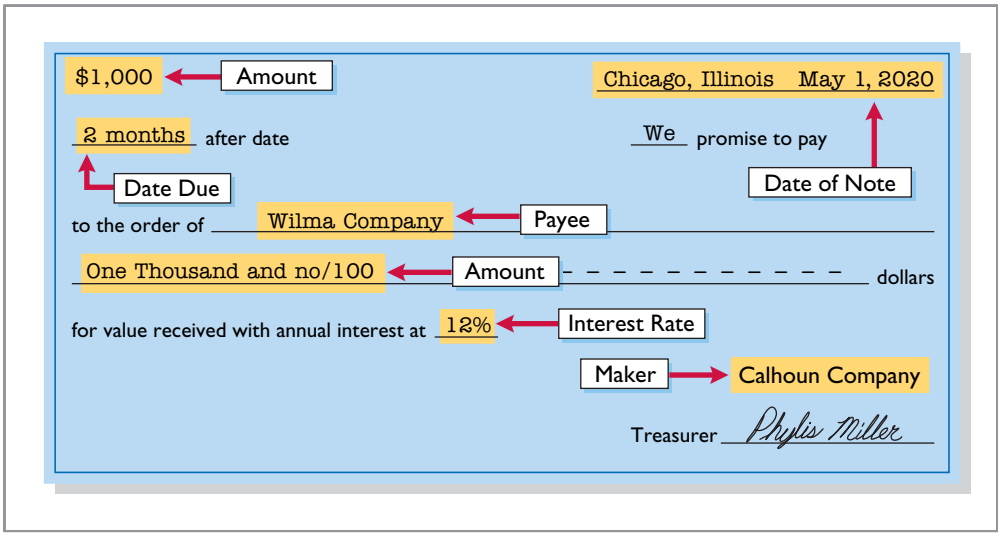
In the note shown in Illustration 9.12, Calhoun Company is the maker and Wilma Company is the payee. To Wilma Company, the promissory note is a note receivable. To Calhoun Company, it is a note payable (see Helpful Hint).

**ILLUSTRATION 9.12**
**Promissory note**




**HELPFUL HINT**

For this note, the maker, Calhoun Company, debits Cash and credits Notes Payable. The payee, Wilma Company, debits Notes Receivable and credits Cash.

Notes receivable give the holder a stronger legal claim to assets than do accounts receivable. Like accounts receivable, notes receivable can be readily sold to another party. Promissory notes are negotiable instruments (as are checks), which means that they can be transferred to another party by endorsement.

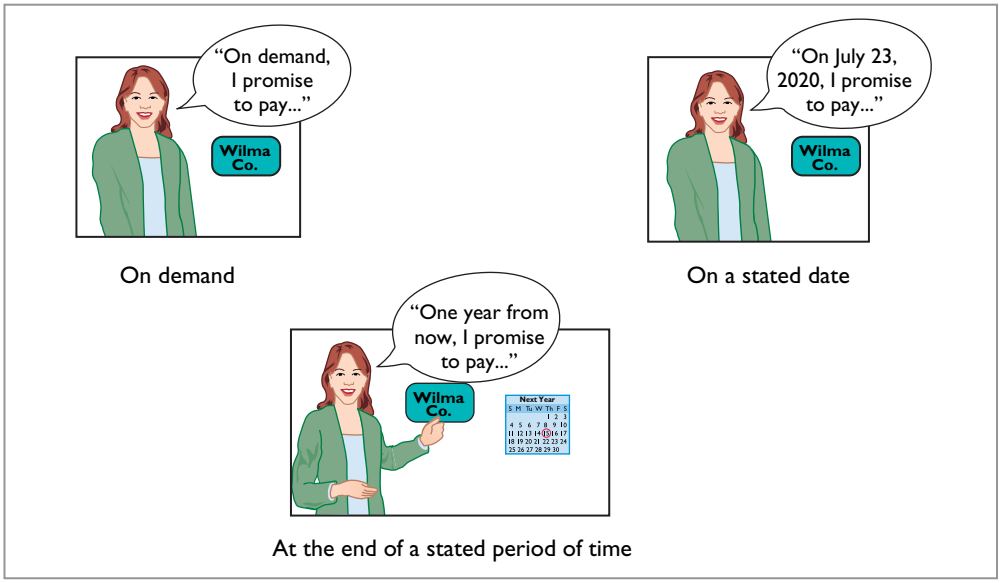
Companies frequently accept notes receivable from customers who need to extend the payment of an outstanding account receivable. They often require such notes from high-risk customers. In some industries (such as the pleasure and sport boat industry), all credit sales are supported by notes. The majority of notes, however, originate from lending transactions.

The basic issues in accounting for notes receivable are the same as those for accounts receivable. On the following pages, we look at these issues. Before we do, however, we need to consider two issues that do not apply to accounts receivable: determining the maturity date and computing interest.

## Determining the Maturity Date

Illustration 9.13 shows three ways of stating the maturity date of a promissory note.

**ILLUSTRATION 9.13**
**Maturity date of different notes**


"On demand, I promise to pay..."
Wilma Co.
On demand
"On July 23, 2020, I promise to pay..."
Wilma Co.
On a stated date
"One year from now, I promise to pay..."
Wilma Co.
Next Year
At the end of a stated period of time

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When the life of a note is expressed in terms of months, you find the date when it matures by counting the months from the date of issue. For example, the maturity date of a three-month note dated May 1 is August 1. A note drawn on the last day of a month matures on the last day of a subsequent month. That is, a July 31 note due in two months matures on September 30.

When the due date is stated in terms of days, you need to count the exact number of days to determine the maturity date. In counting, **omit the date the note is issued but include the due date**. For example, the maturity date of a 60-day note dated July 17 is September 15, computed as shown in Illustration 9.14.

| | | |
|---|---|---|
| Term of note | | 60 days |
| July (31−17) | 14 | |
| August | 31 | 45 |
| **Maturity date: September** | | **15** |

**ILLUSTRATION 9.14**
**Computation of maturity date**

## Computing Interest

Illustration 9.15 gives the basic formula for computing interest on an interest-bearing note.

| Face Value of Note | × | Annual Interest Rate | × | Time in Terms of One Year | = | Interest |
|---|---|---|---|---|---|---|

**ILLUSTRATION 9.15**
**Formula for computing interest**

The interest rate specified in a note is an **annual** rate of interest (see Helpful Hint). The time factor in the formula in Illustration 9.15 expresses the fraction of a year that the note is outstanding. When the maturity date is stated in days, the time factor is often the number of days divided by 360. Remember that when counting days, omit the date that the note is issued but include the due date. When the due date is stated in months, the time factor is the number of months divided by 12. Illustration 9.16 shows computation of interest for various time periods.

**HELPFUL HINT**
The interest rate specified is the *annual* rate.

**ILLUSTRATION 9.16**
**Computation of interest**

| Terms of Note | Interest Computation | | | | | |
|---|---|---|---|---|---|---|
| | Face | × Rate | × Time | = | Interest |
| $ 730, 12%, 120 days | $ 730 | × 12% | × 120/360 | = | $ 29.20 |
| $1,000, 9%, 6 months | $1,000 | × 9% | × 6/12 | = | $ 45.00 |
| $2,000, 6%, 1 year | $2,000 | × 6% | × 1/1 | = | $120.00 |

There are different ways to calculate interest. For example, the computation in Illustration 9.16 assumes 360 days for the length of the year. Most financial institutions use 365 days to compute interest. *For homework problems, assume 360 days to simplify computations.*

## Recognizing Notes Receivable

To illustrate the basic entry for notes receivable, we will use Calhoun Company's $1,000, two-month, 12% promissory note dated May 1. Assuming that Calhoun Company wrote the

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note to settle an open account, Wilma Company makes the following entry for the receipt of the note.

A = L + OE
+1,000
−1,000
**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| May 1 | Notes Receivable | 1,000 | |
| | Accounts Receivable | | 1,000 |
| | (To record acceptance of Calhoun Company note) | | |

The company records the note receivable at its **face value**, the value shown on the face of the note. No interest revenue is reported when the note is accepted because the revenue recognition principle does not recognize revenue until the performance obligation is satisfied. Interest is earned (accrued) as time passes.

If a company issues cash in exchange for a note, the entry is a debit to Notes Receivable and a credit to Cash in the amount of the loan.

# Valuing Notes Receivable

Valuing short-term notes receivable is the same as valuing accounts receivable. Like accounts receivable, companies report short-term notes receivable at their **cash (net) realizable value**. The notes receivable allowance account is Allowance for Doubtful Accounts. The estimations involved in determining cash realizable value and in recording bad debt expense and the related allowance are done similarly to accounts receivable.

# Disposing of Notes Receivable

Notes may be held to their maturity date, at which time the face value plus accrued interest is due. In some situations, the maker of the note defaults, and the payee must make an appropriate adjustment. In other situations, similar to accounts receivable, the holder of the note speeds up the conversion to cash by selling the receivables (as described earlier in this chapter).

## Honor of Notes Receivable

A note is **honored** when its maker pays in full at its maturity date. For each interest-bearing note, the **amount due at maturity** is the face value of the note plus interest for the length of time specified on the note.

To illustrate, assume that Wolder Co. lends Higley Co. $10,000 on June 1, accepting a five-month, 9% interest note. In this situation, interest is $375 ($10,000 × 9% × $\frac{5}{12}$). The amount due, **the maturity value**, is $10,375 ($10,000 + $375). To obtain payment, Wolder (the payee) must present the note either to Higley Co. (the maker) or to the maker's agent, such as a bank. If Wolder presents the note to Higley Co. on November 1, the maturity date, Wolder's entry to record the collection is as follows.

A = L + OE
+10,375
−10,000
+375 Rev
**Cash Flows**
+10,375

| | | | |
|---|---|---|---|
| Nov. 1 | Cash | 10,375 | |
| | Notes Receivable | | 10,000 |
| | Interest Revenue ($10,000 × 9% × $\frac{5}{12}$) | | 375 |
| | (To record collection of Higley note and interest) | | |

## Accrual of Interest Receivable

Suppose instead that Wolder Co. prepares financial statements as of September 30. The timeline in **Illustration 9.17** presents this situation.

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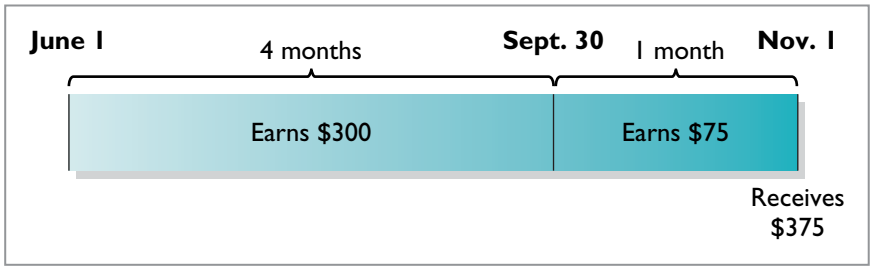


**ILLUSTRATION 9.17**
**Timeline of interest earned**

To reflect interest earned but not yet received, Wolder must accrue interest on September 30. In this case, the adjusting entry by Wolder is for four months of interest, or $300, as shown below.

| | | | |
|---|---|---|---|
| Sept. 30 | Interest Receivable ($10,000 × 9% × $\frac{4}{12}$) | 300 | |
| | Interest Revenue | | 300 |
| | (To accrue 4 months' interest on Higley note) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +300 | | | | |
| | | | | +300 Rev |

**Cash Flows**
no effect

At the note's maturity on November 1, Wolder receives $10,375. This amount represents repayment of the $10,000 note as well as five months of interest, or $375, as shown below. The $375 is comprised of the $300 Interest Receivable accrued on September 30 plus $75 earned during October. Wolder's entry to record the honoring of the Higley note on November 1 is as follows.

| | | | |
|---|---|---|---|
| Nov. 1 | Cash [$10,000 + ($10,000 × 9% × $\frac{5}{12}$)] | 10,375 | |
| | Notes Receivable | | 10,000 |
| | Interest Receivable | | 300 |
| | Interest Revenue ($10,000 × 9% × $\frac{1}{12}$)] | | 75 |
| | (To record collection of Higley note and interest) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +10,375 | | | | |
| −10,000 | | | | |
| −300 | | | | |
| | | | | +75 Rev |

**Cash Flows**
+10,375

In this case, Wolder credits Interest Receivable because the receivable was established in the adjusting entry on September 30.

## Dishonor of Notes Receivable

A **dishonored (defaulted) note** is a note that is not paid in full at maturity. A dishonored note receivable is no longer negotiable. However, the payee still has a claim against the maker of the note for both the note and the interest. Therefore, the note holder usually transfers the Notes Receivable account to an Accounts Receivable account.

To illustrate, assume that Higley Co. on November 1 indicates that it cannot pay at the present time. The entry to record the dishonor of the note depends on whether Wolder Co. expects eventual collection. If it does expect eventual collection, Wolder Co. debits the amount due (face value and interest) on the note to Accounts Receivable. It would make the following entry at the time the note is dishonored (assuming no previous accrual of interest).

| | | | |
|---|---|---|---|
| Nov. 1 | Accounts Receivable | 10,375 | |
| | Notes Receivable | | 10,000 |
| | Interest Revenue | | 375 |
| | (To record the dishonor of Higley note) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +10,375 | | | | |
| −10,000 | | | | |
| | | | | +375 Rev |

**Cash Flows**
no effect

If instead on November 1 there is no hope of collection, the note holder would write off the face value of the note by debiting Allowance for Doubtful Accounts. No interest revenue would be recorded because collection will not occur.

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## Accounting Across the Organization — Countrywide Financial Corporation

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### Bad Information Can Lead to Bad Loans

Many factors have contributed to the financial crisis of 2008. One significant factor that resulted in many bad loans was a failure by lenders to investigate loan customers sufficiently. For example, **Countrywide Financial Corporation** wrote many loans under its "Fast and Easy" loan program. That program allowed borrowers to provide little or no documentation for their income or their assets. Other lenders had similar programs, which earned the nickname "liars' loans." One study found that in these situations, 60% of applicants overstated their incomes by more than 50% in order to qualify for a loan. Critics of the banking industry say that because loan officers were compensated for loan volume and because banks were selling the loans to investors rather than holding them, the lenders had little incentive to investigate the borrowers' creditworthiness.

**Sources:** Glenn R. Simpson and James R. Hagerty, "Countrywide Loss Focuses Attention on Underwriting," *Wall Street Journal* (April 30, 2008), p. B1; and Michael Corkery, "Fraud Seen as Driver in Wave of Foreclosures," *Wall Street Journal* (December 21, 2007), p. A1.

**What steps should the banks have taken to ensure the accuracy of financial information provided on loan applications? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 3 | Recognizing Notes Receivable

Gambit Stores accepts from Leonard Co. a $3,400, 90-day, 6% note dated May 10 in settlement of Leonard's overdue account. (a) What is the maturity date of the note? (b) What is the interest payable at the maturity date? (c) What entry does Gambit make at the maturity date, assuming Leonard pays the note and interest in full at that time?

**ACTION PLAN**

- Count the exact number of days to determine the maturity date. Omit the date the note is issued, but include the due date.
- Compute the accrued interest.
- Prepare the entry for payment of the note and the interest.

### Solution

**a.** The maturity date is August 8, computed as follows.

| | | |
|---|---|---|
| Term of note: | | 90 days |
| May (31–10) | 21 | |
| June | 30 | |
| July | 31 | 82 |
| Maturity date: August | | 8 |

**b.** The interest payable at the maturity date is $51, computed as follows.

| Face | × | Rate | × | Time | = | Interest |
|---|---|---|---|---|---|---|
| $3,400 | × | 6% | × | 90/360 | = | $51 |

**c.** Gambit Stores records this entry at the maturity date:

| | | |
|---|---|---|
| Cash | 3,451 | |
| Notes Receivable | | 3,400 |
| Interest Revenue | | 51 |
| (To record collection of Leonard note and interest) | | |

Related exercise material: **BE9.8, BE9.9, BE9.10, DO IT! 9.3, E9.12, E9.13, and E9.14.**

# Presentation and Analysis

**LEARNING OBJECTIVE 4**

Describe the statement presentation and analysis of receivables.

If a company has significant receivables, analysts carefully review the company's financial statement disclosures to evaluate how well the company is managing its receivables.

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## Presentation

Companies should identify in the balance sheet or in the notes to the financial statements each of the major types of receivables. Short-term receivables appear in the current assets section of the balance sheet. Short-term investments appear before short-term receivables because these investments are more liquid (nearer to cash). Companies report both the gross amount of receivables and the allowance for doubtful accounts.

In the income statement, companies report bad debt expense and service charge expense as operating expenses. Interest revenue appears under "Other revenues and gains" in the non-operating activities section of the income statement.

Presented below are examples of different types of information provided to help users understand the issues related to receivables. **Illustration 9.18**, for example, shows the composition of **Deere & Company**'s net receivables. Given that receivables represent 60% of the total assets of this heavy equipment manufacturer, investors are interested in the types of receivables and their significance.

Real World

**Deere & Company**
**Balance Sheet (partial)**
**(in millions)**

| | |
|---|---|
| Receivables | |
| Receivables from unconsolidated subsidiaries | $ 30 |
| Trade accounts and notes receivable | 3,278 |
| Financing receivables | 27,583 |
| Restricted financing receivables | 4,616 |
| Other receivables | 1,500 |
| Total receivables | 37,007 |
| Less: Allowance for doubtful trade receivables | 175 |
| Net receivables | $36,832 |

**ILLUSTRATION 9.18**
**Balance sheet presentation of receivables**

**Illustration 9.19** contains an excerpt from the notes to the financial statements of **Skechers**, discussing how it monitors receivables.

Real World

**Skechers USA**
**Notes to the Financial Statements**

To minimize the likelihood of uncollectibility, customers' credit-worthiness is reviewed periodically based on external credit reporting services, financial statements issued by the customer and our experience with the account, and it is adjusted accordingly. When a customer's account becomes significantly past due, we generally place a hold on the account and discontinue further shipments to that customer, minimizing further risk of loss.

**ILLUSTRATION 9.19**
**Note on monitoring Skechers' receivables**

If a company has significant concentrations of credit risk, it must discuss this risk in the notes to its financial statements. A **concentration of credit risk** is a threat of nonpayment from a single large customer or class of customers that could adversely affect the financial health of the company. **Illustration 9.20** shows an excerpt from the credit risk note from Skechers' 2015 annual report. The company reports that its five largest customers account for 14.6% of its net sales.

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**ILLUSTRATION 9.20**
**Excerpt from Skechers' note on concentration of credit risk**

Real World

**Skechers USA**
**Notes to the Financial Statements**

During 2015, 2014 and 2013, no customer accounted for 10.0% or more of net sales. As of December 31, 2015, one customer accounted for 10.6% of gross trade receivables. No other customer accounted for more than 10% of net trade receivables at December 31, 2015 or 2014. During 2015, 2014 and 2013, net sales to the five largest customers were approximately 14.6%, 15.7% and 18.1%, respectively.

This note to Skechers' financial statements indicates it has a relatively high concentration of credit risk. A default by any of these large customers could have a significant negative impact on its financial performance.

## Analysis

Investors and corporate managers compute financial ratios to evaluate the liquidity of a company's accounts receivable. They use the **accounts receivable turnover** to assess the liquidity of the receivables. This ratio measures the number of times, on average, the company collects accounts receivable during the period. It is computed by dividing net credit sales (net sales less cash sales) by the average net accounts receivable during the year. Unless seasonal factors are significant, average net accounts receivable outstanding can be computed from the beginning and ending balances of net accounts receivable.

For example, **Cisco Systems** had net sales of $37,750 million in a recent year. It had a beginning accounts receivable (net) balance of $5,157 million and an ending accounts receivable (net) balance of $5,344 million. Assuming that Cisco's sales were all on credit, its accounts receivable turnover is computed as shown in **Illustration 9.21**.

**ILLUSTRATION 9.21**
**Accounts receivable turnover and computation**

| Net Credit Sales | ÷ | Average Net Accounts Receivable | = | Accounts Receivable Turnover |
|---|---|---|---|---|
| $37,750 | ÷ | $\frac{\$5,157 + \$5,344}{2}$ | = | 7.2 times |

The result indicates an accounts receivable turnover of 7.2 times per year. The higher the turnover, the more liquid the company's receivables.

A variant of the accounts receivable turnover that makes the liquidity even more evident is its conversion into an **average collection period** in terms of days. This is done by dividing the accounts receivable turnover into 365 days. For example, Cisco's turnover of 7.2 times is divided into 365 days, as shown in **Illustration 9.22**, to obtain approximately 51 days. This means that it takes Cisco 51 days to collect its accounts receivable.

**ILLUSTRATION 9.22**
**Average collection period for receivables formula and computation**

| Days in Year | ÷ | Accounts Receivable Turnover | = | Average Collection Period in Days |
|---|---|---|---|---|
| 365 days | ÷ | 7.2 times | = | 51 days |

Companies frequently use the average collection period to assess the effectiveness of a company's credit and collection policies. The general rule is that the collection period should not greatly exceed the credit term period (that is, the time allowed for payment).

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### DO IT! 4 | Analysis of Receivables

In 2020, Phil Mickelson Company has net credit sales of $923,795 for the year. It had a beginning accounts receivable (net) balance of $38,275 and an ending accounts receivable (net) balance of $35,988. Compute Phil Mickelson Company's (a) accounts receivable turnover and (b) average collection period in days.

**ACTION PLAN**

- Review the formula to compute the accounts receivable turnover.
- Make sure that both the beginning and ending accounts receivable balances are considered in the computation.
- Review the formula to compute the average collection period in days.

**Solution**

| | | | | | |
|---|---|---|---|---|---|
| **a.** | Net credit sales | ÷ | Average net accounts receivable | = | Accounts receivable turnover |
| | $923,795 | ÷ | $\frac{\$38,275 + \$35,988}{2}$ | = | 24.9 times |
| **b.** | Days in year | ÷ | Accounts receivable turnover | = | Average collection period in days |
| | 365 | ÷ | 24.9 times | = | 14.7 days |

Related exercise material: **BE9.12, DO IT! 9.4, and E9.17.**

# Review and Practice

## Learning Objectives Review

### 1 Explain how companies recognize accounts receivable.

Receivables are frequently classified as (1) accounts, (2) notes, and (3) other. Accounts receivable are amounts customers owe on account. Notes receivable are claims for which lenders issue formal instruments of credit as proof of the debt. Other receivables include nontrade receivables such as interest receivable, loans to company officers, advances to employees, and income taxes refundable.

Companies record accounts receivable when they perform a service on account or at the point of sale of merchandise on account. Accounts receivable are reduced by sales returns and allowances. Cash discounts reduce the amount received on accounts receivable. When interest is charged on a past due receivable, the company adds this interest to the accounts receivable balance and recognizes it as interest revenue.

### 2 Describe how companies value accounts receivable and record their disposition.

There are two methods of accounting for uncollectible accounts: the allowance method and the direct write-off method. Companies use the percentage-of-receivables basis to estimate uncollectible accounts using the allowance method. The percentage-of-receivables basis emphasizes the cash realizable value of the accounts receivable. An aging schedule is often used with this basis.

When a company collects an account receivable, it credits Accounts Receivable. When a company sells (factors) an account receivable, a service charge expense reduces the amount received.

### 3 Explain how companies recognize, value, and dispose of notes receivable.

For a note stated in months, the maturity date is found by counting the months from the date of issue. For a note stated in days, the number of days is counted, omitting the issue date and counting the due date. The formula for computing interest is Face value × Interest rate × Time.

Companies record notes receivable at face value. In some cases, it is necessary to accrue interest prior to maturity. In this case, companies debit Interest Receivable and credit Interest Revenue.

Notes can be held to maturity. At that time the face value plus accrued interest is due, and the note is removed from the accounts. In many cases, the holder of the note speeds up the conversion by selling the receivable to another party (a factor). In some situations, the maker of the note dishonors the note (defaults), in which case the company transfers the note and accrued interest to an account receivable or writes off the note.

### 4 Describe the statement presentation and analysis of receivables.

As with accounts receivable, companies report notes receivable at their cash (net) realizable value. The notes receivable allowance account is Allowance for Doubtful Accounts. The computation and estimations involved in valuing notes receivable at cash realizable value, and in recording the proper amount of bad debt expense and the related allowance, are similar to those for accounts receivable.

Companies should identify in the balance sheet or in the notes to the financial statements each major type of receivable. Short-term

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receivables are considered current assets. Companies report the gross amount of receivables and the allowance for doubtful accounts. They report bad debt and service charge expenses in the multiple-step income statement as operating (selling) expenses. Interest revenue appears under other revenues and gains in the nonoperating activities section of the statement. Managers and investors evaluate accounts receivable for liquidity by computing a turnover ratio and an average collection period.

## Glossary Review

**Accounts receivable** Amounts owed by customers on account. (p. 9-3).

**Accounts receivable turnover** A measure of the liquidity of accounts receivable; computed by dividing net credit sales by average net accounts receivable. (p. 9-20).

**Aging the accounts receivable** The analysis of customer balances by the length of time they have been unpaid. (p. 9-8).

**Allowance method** A method of accounting for bad debts that involves estimating uncollectible accounts at the end of each period. (p. 9-6).

**Average collection period** The average amount of time that a receivable is outstanding; calculated by dividing 365 days by the accounts receivable turnover. (p. 9-20).

**Bad Debt Expense** An expense account to record uncollectible receivables. (p. 9-5).

**Cash (net) realizable value** The net amount a company expects to receive in cash. (p. 9-6).

**Direct write-off method** A method of accounting for bad debts that involves expensing accounts at the time they are determined to be uncollectible. (p. 9-5).

**Dishonored (defaulted) note** A note that is not paid in full at maturity. (p. 9-17).

**Factor** A finance company or bank that buys receivables from businesses and then collects the payments directly from the customers. (p. 9-11).

**Maker** The party in a promissory note who is making the promise to pay. (p. 9-13).

**Notes receivable** Written promise (as evidenced by a formal instrument) for amounts to be received. (p. 9-3).

**Other receivables** Various forms of nontrade receivables, such as interest receivable and income taxes refundable. (p. 9-3).

**Payee** The party to whom payment of a promissory note is to be made. (p. 9-13).

**Percentage-of-receivables basis** Management estimates what percentage of receivables will result in losses from uncollectible accounts. (p. 9-8).

**Promissory note** A written promise to pay a specified amount of money on demand or at a definite time. (p. 9-13).

**Receivables** Amounts due from individuals and other companies. (p. 9-2).

**Trade receivables** Notes and accounts receivable that result from sales transactions. (p. 9-3).

## Practice Multiple-Choice Questions

**1. (LO 1)** Receivables are frequently classified as:

**a.** accounts receivable, company receivables, and other receivables.

**b.** accounts receivable, notes receivable, and employee receivables.

**c.** accounts receivable and general receivables.

**d.** accounts receivable, notes receivable, and other receivables.

**2. (LO 1)** Buehler Company on June 15 sells merchandise on account to Chaz Co. for $1,000, terms 2/10, n/30. On June 20, Chaz Co. returns merchandise worth $300 to Buehler Company. On June 24, payment is received from Chaz Co. for the balance due. What is the amount of cash received?

**a.** $700. **c.** $686.

**b.** $680. **d.** None of the above.

**3. (LO 2)** Hughes Company has a credit balance of $5,000 in its Allowance for Doubtful Accounts before any adjustments are made at the end of the year. Based on review and aging of its accounts receivable at the end of the year, Hughes estimates that $60,000 of its receivables are uncollectible. The amount of bad debt expense which should be reported for the year is:

**a.** $5,000. **c.** $60,000.

**b.** $55,000. **d.** $65,000.

**4. (LO 2)** Use the same information as in Question 3, except that Hughes has a debit balance of $5,000 in its Allowance for Doubtful Accounts before any adjustments are made at the end of the year. In this situation, the amount of bad debt expense that should be reported for the year is:

**a.** $5,000. **c.** $60,000.

**b.** $55,000. **d.** $65,000.

**5. (LO 2)** Accounts receivable at the end of the month are $800,000. Bad debts are expected to be 1.5% of accounts receivable. If Allowance for Doubtful Accounts has a credit balance of $1,000 before adjustment, what is the balance after adjustment?

**a.** $7,000. **c.** $12,000.

**b.** $11,000. **d.** $13,000.

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**6.** **(LO 2)** At December 31, 2020, Roso Carlson Company had accounts receivable of $750,000. On January 1, 2020, Allowance for Doubtful Accounts had a credit balance of $18,000. During 2020, $30,000 of uncollectible accounts receivable were written off. Past experience indicates that 3% of accounts receivable become uncollectible. What should be the bad debt expense for 2020?

**a.** $10,500.
**c.** $30,000.
**b.** $22,500.
**d.** $34,500.

**7.** **(LO 2)** An analysis and aging of the accounts receivable of Prince Company at December 31 reveals the following data.

| | |
|---|---|
| Accounts receivable | $800,000 |
| Allowance for doubtful accounts per books before adjustment | 50,000 |
| Amounts expected to become uncollectible | 65,000 |

The cash realizable value of the accounts receivable at December 31, after adjustment, is:

**a.** $685,000.
**c.** $800,000.
**b.** $750,000.
**d.** $735,000.

**8.** **(LO 2)** Which of the following statements about Visa credit card sales is **incorrect**?

**a.** The credit card issuer makes the credit investigation of the customer.
**b.** The retailer is not involved in the collection process.
**c.** Two parties are involved.
**d.** The retailer receives cash more quickly than it would from individual customers on account.

**9.** **(LO 2)** Blinka Retailers accepted $50,000 of Citibank Visa credit card charges for merchandise sold on July 1. Citibank charges 4% for its credit card use. The entry to record this transaction by Blinka Retailers will include a credit to Sales Revenue of $50,000 and a debit(s) to:

| | | |
|---|---|---|
| **a.** | Cash | $48,000 |
| | and Service Charge Expense | $2,000 |
| **b.** | Accounts Receivable | $48,000 |
| | and Service Charge Expense | $2,000 |
| **c.** | Cash | $50,000 |
| **d.** | Accounts Receivable | $50,000 |

**10.** **(LO 3)** One of the following statements about promissory notes is incorrect. The **incorrect** statement is:

**a.** The party making the promise to pay is called the maker.
**b.** The party to whom payment is to be made is called the payee.
**c.** A promissory note is not a negotiable instrument.
**d.** A promissory note is often required from high-risk customers.

**11.** **(LO 3)** Foti Co. accepts a $1,000, 3-month, 6% promissory note in settlement of an account with Bartelt Co. The entry to record this transaction is as follows.

| | | | |
|---|---|---|---|
| **a.** | Notes Receivable | 1,015 | |
| | Accounts Receivable | | 1,015 |
| **b.** | Notes Receivable | 1,000 | |
| | Accounts Receivable | | 1,000 |
| **c.** | Notes Receivable | 1,000 | |
| | Sales Revenue | | 1,000 |
| **d.** | Notes Receivable | 1,030 | |
| | Accounts Receivable | | 1,030 |

**12.** **(LO 3)** Ginter Co. holds Kolar Inc.'s $10,000, 120-day, 9% note. The entry made by Ginter Co. when the note is collected, assuming no interest has been previously accrued, is:

| | | | |
|---|---|---|---|
| **a.** | Cash | 10,300 | |
| | Notes Receivable | | 10,300 |
| **b.** | Cash | 10,000 | |
| | Notes Receivable | | 10,000 |
| **c.** | Accounts Receivable | 10,300 | |
| | Notes Receivable | | 10,000 |
| | Interest Revenue | | 300 |
| **d.** | Cash | 10,300 | |
| | Notes Receivable | | 10,000 |
| | Interest Revenue | | 300 |

**13.** **(LO 4)** Accounts and notes receivable are reported in the current assets section of the balance sheet at:

**a.** cash (net) realizable value.
**b.** net book value.
**c.** lower-of-cost-or-net realizable value.
**d.** invoice cost.

**14.** **(LO 4)** Oliveras Company had net credit sales during the year of $800,000 and cost of goods sold of $500,000. The balance in accounts receivable at the beginning of the year was $100,000, and the end of the year it was $150,000. What were the accounts receivable turnover and the average collection period in days?

**a.** 4.0 and 91.3 days.
**b.** 5.3 and 68.9 days.
**c.** 6.4 and 57 days.
**d.** 8.0 and 45.6 days.

## Solutions

**1.** **d.** Receivables are frequently classified as accounts receivable, notes receivable, and other receivables. The other choices are incorrect because receivables are not frequently classified as (a) company receivables, (b), employee receivables, or (c) general receivables.

**2.** **c.** Because payment is received within 10 days of the purchase, the cash received is $686 {[$1,000 − $300] − [($1,000 − $300) × 2%]}. The other choices are incorrect because (a) $700 does not consider the 2% discount; (b) the amount of the discount is based upon the amount after the return is granted ($700 × 2%), not the amount before the return of merchandise ($1,000 × 2%); and (d) there is a correct answer.

**3.** **b.** By crediting Allowance for Doubtful Accounts for $55,000, the new balance will be the required balance of $60,000. This adjusting entry debits Bad Debt Expense for $55,000 and credits Allowance for Doubtful Accounts for $55,000, not (a) $5,000, (c) $60,000, or (d) $65,000.

**4.** **d.** By crediting Allowance for Doubtful Accounts for $65,000, the new balance will be the required balance of $60,000. This adjusting entry debits Bad Debt Expense for $65,000 and credits

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Allowance for Doubtful Accounts for $65,000, not (a) $5,000, (b) $55,000, or (c) $60,000.

**5. b.** Accounts receivable times the percentage expected to default equals $12,000 ($800,000 × 1.5%). Because the balance in Allowance for Doubtful Accounts is presently $1,000, the adjusting entry debits Bad Debt Expense for $11,000 ($12,000 − $1,000) and credits Allowance for Doubtful Accounts for $11,000, not (a) $7,000, (c) $12,000, or (d) $13,000.

**6. d.** The accounts written off during the year will result in a debit balance in Allowance for Doubtful Accounts of $12,000 ($30,000 − $18,000) at the end of the year. As indicated, 3% of accounts receivable are uncollectible, or $22,500 ($750,000 × 3%). Given a debit balance of $12,000 in Allowance for Doubtful Accounts at the end of the year, the adjusting entry at the end of the year is a debit to Bad Debt Expense of $34,500 ($22,500 + $12,000) and a credit to Allowance for Doubtful Accounts of $34,500 not (a) $10,500, (b) $22,500, or (c) $30,000.

**7. d.** Accounts Receivable less the expected uncollectible amount equals the cash realizable value of $735,000 ($800,000 − $65,000), not (a) $685,000, (b) $750,000, or (c) $800,000.

**8. c.** There are three parties, not two, involved in Visa credit card sales: the credit card company, the retailer, and the customer. The other choices are true statements.

**9. a.** Credit card sales are considered cash sales. Cash is debited $48,000 for the net amount received ($50,000 − $2,000 for credit card use fee), and Service Charge Expense is debited $2,000 for the 4% credit card use fee ($50,000 × 4%). The other choices are therefore incorrect.

**10. c.** A promissory note is a negotiable instrument. The other choices are true statements.

**11. b.** Notes Receivable is recorded at face value ($1,000). No interest on the note is recorded until it is earned. Accounts Receivable is credited because no new sales have been made. The other choices are therefore incorrect.

**12. d.** Cash is debited for its maturity value [$10,000 + interest earned ($10,000 × 1/3 × 9%)], Notes Receivable credited for its face value, and Interest Revenue credited for the amount of interest earned. The other choices are therefore incorrect.

**13. a.** Accounts Receivable is reported in the current assets section of the balance sheet at the gross amount less the allowance for doubtful accounts, not at (b) net book value, (c) lower-of-cost-or-net realizable value, or (d) invoice cost.

**14. c.** The accounts receivable turnover is 6.4 [$800,000/($100,000 + $150,000)/2]. The average collection period in days is 57 days (365/6.4). The other choices are therefore incorrect.

## Practice Brief Exercises

*Record basic accounts receivable transactions.*

**1. (LO 1)** Record the following transactions on the books of Gonzalez Co.

**a.** On August 1, Gonzalez Co. sold merchandise on account to Miguel Inc. for $15,500, terms 1/10, n/30.

**b.** On August 8, Miguel Inc. returned merchandise worth $3,100 to Gonzalez Co.

**c.** On August 11, Miguel Inc. paid for the merchandise.

### Solution

| | | | |
|---|---|---|---|
| **1. a.** Accounts Receivable | | 15,500 | |
| Sales Revenue | | | 15,500 |
| **b.** Sales Returns and Allowances | | 3,100 | |
| Accounts Receivable | | | 3,100 |
| **c.** Cash ($12,400 − $124) | | 12,276 | |
| Sales Discounts ($12,400 × 1%) | | 124 | |
| Accounts Receivable ($15,500 − $3,100) | | | 12,400 |

*Prepare entry using percentage-of-receivables method.*

**2. (LO 2)** Sanchez Co. uses the percentage-of-receivables basis in 2020 to record bad debt expense. It estimates that 3% of accounts receivable will become uncollectible. Sales revenues are $900,000 for 2020, and sales returns and allowances are $50,000 at December 31, 2020. Accounts receivable has a balance of $139,000, and the allowance for doubtful accounts has a credit balance of $3,000. Prepare the adjusting entry to record bad debt expense in 2020.

### Solution

| | | | |
|---|---|---|---|
| **2.** Bad Debt Expense [($139,000 × 3%) − $3,000] | | 1,170 | |
| Allowance for Doubtful Accounts | | | 1,170 |

*Prepare entry for notes receivable exchanged for account receivable.*

**3. (LO 3)** On January 20, 2020, Carlos Co. sold merchandise on account to Carson Co. for $20,000, n/30. On February 19, Carson Co. gave Carlos Co. an 8% promissory note in settlement of this account. Prepare the journal entry to record the sale and the settlement of the account receivable.

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### Solution

| | | | | |
|---|---|---|---|---|
| Jan. 20 | Accounts Receivable | | 20,000 | |
| | Sales Revenue | | | 20,000 |
| Feb. 19 | Notes Receivable | | 20,000 | |
| | Accounts Receivable | | | 20,000 |

## Practice Exercises

**1. (LO 2)** The ledger of Nuro Company at the end of the current year shows Accounts Receivable $180,000, Sales Revenue $1,800,000, and Sales Returns and Allowances $60,000.

*Journalize entries to record allowance for doubtful accounts using two different bases.*

### Instructions

**a.** If Nuro uses the direct write-off method to account for uncollectible accounts, journalize the adjusting entry at December 31, assuming Nuro determines that $2,900 of the Accounts Receivable balance is uncollectible.

**b.** If Allowance for Doubtful Accounts has a credit balance of $4,300 in the trial balance, journalize the adjusting entry at December 31, assuming bad debts are expected to be 10% of accounts receivable.

**c.** If Allowance for Doubtful Accounts has a debit balance of $410 in the trial balance, journalize the adjusting entry at December 31, assuming bad debts are expected to be 6% of accounts receivable.

### Solution

| | | | | | |
|---|---|---|---|---|---|
| 1. **a.** | Dec. 31 | Bad Debt Expense | | 2,900 | |
| | | Accounts Receivable | | | 2,900 |
| **b.** | Dec. 31 | Bad Debt Expense | | 13,700 | |
| | | Allowance for Doubtful Accounts [($180,000 × 10%) − $4,300] | | | 13,700 |
| **c.** | Dec. 31 | Bad Debt Expense | | 11,210 | |
| | | Allowance for Doubtful Accounts [($180,000 × 6%) + $410] | | | 11,210 |

**2. (LO 3)** Sargeant Supply Co. has the following transactions related to notes receivable during the last 2 months of 2020.

*Journalize entries for notes receivable transactions.*

Nov. 1 Loaned $20,000 cash to Mary Hawkins on a 1-year, 12% note.
Dec. 11 Sold goods to Eminem, Inc., receiving a $9,000, 90-day, 8% note.
16 Received a $8,000, 6-month, 9% note in exchange for Rick DeLong's outstanding accounts receivable.
31 Accrued interest revenue on all notes receivable.

### Instructions

**a.** Journalize the transactions for Sargeant Supply Co.

**b.** Record the collection of the Hawkins note at its maturity in 2021.

### Solution

2. **a.**

**2020**

| | | | | |
|---|---|---|---|---|
| Nov. 1 | Notes Receivable | | 20,000 | |
| | Cash | | | 20,000 |

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| | | | |
|---|---|---|---|
| Dec. 11 | Notes Receivable | 9,000 | |
| | Sales Revenue | | 9,000 |
| 16 | Notes Receivable | 8,000 | |
| | Accounts Receivable | | 8,000 |
| 31 | Interest Receivable | 470 | |
| | Interest Revenue* | | 470 |

*Calculation of interest revenue:

| | |
|---|---|
| Hawkins' note: | $20,000 × 12% × 2/12 = $400 |
| Eminem's note: | 9,000 × 8% × 20/360 = 40 |
| DeLong's note: | 8,000 × 9% × 15/360 = 30 |
| Total accrued interest | $470 |

**b.** **2021**

| | | | |
|---|---|---|---|
| Nov. 1 | Cash | 22,400 | |
| | Interest Receivable | | 400 |
| | Interest Revenue** | | 2,000 |
| | Notes Receivable | | 20,000 |

**($20,000 × 12% × 10/12)

## Practice Problem

*Prepare entries for various receivables transactions.*

**(LO 1, 2, 3)** The following selected transactions relate to Dylan Company.

Mar. 1 Sold $20,000 of merchandise to Potter Company, terms 2/10, n/30.
11 Received payment in full from Potter Company for balance due on existing accounts receivable.
12 Accepted Juno Company's $20,000, 6-month, 12% note for balance due.
13 Made Dylan Company credit card sales for $13,200.
15 Made Visa credit card sales totaling $6,700. A 3% service fee is charged by Visa.
Apr. 11 Sold accounts receivable of $8,000 to Harcot Factor. Harcot Factor assesses a service charge of 2% of the amount of receivables sold.
13 Received collections of $8,200 on Dylan Company credit card sales and added finance charges of 1.5% to the remaining balances.
May 10 Dylan uses the percentage-of-receivables basis to estimate bad debts.
June 30 Accounts receivable total $2,000,000. The bad debt percentage is 1% of accounts receivable. At June 30, the balance in the allowance account is $3,500 before adjustment.
July 16 One of the accounts receivable written off in May was from J. Simon, who pays the amount due, $4,000, in full.

### Instructions

Prepare the journal entries for the transactions. (Ignore entries for cost of goods sold.)

### Solution

| | | | |
|---|---|---|---|
| Mar. 1 | Accounts Receivable | 20,000 | |
| | Sales Revenue | | 20,000 |
| | (To record sales on account) | | |
| 11 | Cash | 19,600 | |
| | Sales Discounts (2% × $20,000) | 400 | |
| | Accounts Receivable | | 20,000 |
| | (To record collection of accounts receivable) | | |
| 12 | Notes Receivable | 20,000 | |
| | Accounts Receivable | | 20,000 |
| | (To record acceptance of Juno Company note) | | |
| 13 | Accounts Receivable | 13,200 | |
| | Sales Revenue | | 13,200 |
| | (To record company credit card sales) | | |

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| | | | |
|---|---|---|---|
| 15 | Cash | 6,499 | |
| | Service Charge Expense (3% × $6,700) | 201 | |
| | Sales Revenue | | 6,700 |
| | (To record credit card sales) | | |
| Apr. 11 | Cash | 7,840 | |
| | Service Charge Expense (2% × $8,000) | 160 | |
| | Accounts Receivable | | 8,000 |
| | (To record sale of receivables to factor) | | |
| 13 | Cash | 8,200 | |
| | Accounts Receivable | | 8,200 |
| | (To record collection of accounts receivable) | | |
| | Accounts Receivable [($13,200 − $8,200) × 1.5%] | 75 | |
| | Interest Revenue | | 75 |
| | (To record interest on amount due) | | |
| May 10 | Allowance for Doubtful Accounts | 16,000 | |
| | Accounts Receivable | | 16,000 |
| | (To record write-off of accounts receivable) | | |
| June 30 | Bad Debt Expense [($2,000,000 × 1%) − $3,500] | 16,500 | |
| | Allowance for Doubtful Accounts | | 16,500 |
| | (To record estimate of uncollectible accounts) | | |
| July 16 | Accounts Receivable | 4,000 | |
| | Allowance for Doubtful Accounts | | 4,000 |
| | (To reverse write-off of accounts receivable) | | |
| | Cash | 4,000 | |
| | Accounts Receivable | | 4,000 |
| | (To record collection of accounts receivable) | | |

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## Questions

**1.** What is the difference between an account receivable and a note receivable?

**2.** What are some common types of receivables other than accounts receivable and notes receivable?

**3.** **Texaco Oil Company** issues its own credit cards. Assume that Texaco charges you $40 interest on an unpaid balance. Prepare the journal entry that Texaco makes to record this revenue.

**4.** What are the essential features of the allowance method of accounting for bad debts?

**5.** Roger Holloway cannot understand why cash realizable value does not decrease when an uncollectible account is written off under the allowance method. Clarify this point for Roger.

**6.** What types of receivables does **Apple** report on its balance sheet? Does it use the allowance method or the direct write-off method to account for uncollectibles?

**7.** Borke Company has a credit balance of $3,000 in Allowance for Doubtful Accounts before adjustment. The total estimated uncollectibles under the percentage-of-receivables basis is $5,800. Prepare the adjusting entry to record bad debt expense.

**8.** How are bad debts accounted for under the direct write-off method? What are the disadvantages of this method?

**9.** Regina Golden, the vice president of sales for Tropical Pools and Spas, wants the company's credit department to be less restrictive in granting credit. "How can we sell anything when you guys won't approve anybody?" she asks. Discuss the pros and cons of easy credit. What are the accounting implications?

**10.** **JCPenney Company** accepts both its own credit cards and national credit cards. What are the advantages of accepting both types of cards?

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**11.** An article recently appeared in the *Wall Street Journal* indicating that companies are selling their receivables at a record rate. Why are companies selling their receivables?

**12.** Westside Textiles decides to sell $800,000 of its accounts receivable to First Factors Inc. First Factors assesses a service charge of 3% of the amount of receivables sold. Prepare the journal entry that Westside Textiles makes to record this sale.

**13.** Your roommate is uncertain about the advantages of a promissory note. Compare the advantages of a note receivable with those of an account receivable.

**14.** How may the maturity date of a promissory note be stated?

**15.** Indicate the maturity date of each of the following promissory notes:

| | Date of Note | Terms |
|---|---|---|
| **a.** | March 13 | one year after date of note |
| **b.** | May 4 | 3 months after date |
| **c.** | June 20 | 30 days after date |
| **d.** | July 1 | 60 days after date |

**16.** Compute the missing amounts for each of the following notes.

| | Principal | Annual Interest Rate | Time | Total Interest |
|---|---|---|---|---|
| **a.** | ? | 9% | 120 days | $ 450 |
| **b.** | $30,000 | 10% | 3 years | ? |
| **c.** | $60,000 | ? | 5 months | $1,500 |
| **d.** | $45,000 | 8% | ? | $1,200 |

**17.** Jana Company dishonors a note at maturity. What are the options available to the lender?

**18.** **General Motors Corporation** has accounts receivable and notes receivable. How should the receivables be reported on the balance sheet?

**19.** The accounts receivable turnover is 8.14, and average net receivables during the period are $400,000. What is the amount of net credit sales for the period?

**20.** What percentage does **Apple**'s 2015 allowance for doubtful accounts represent as a percentage of its gross receivables?

## Brief Exercises

*Identify different types of receivables.*

**BE9.1 (LO 1)** Presented below are three receivables transactions. Indicate whether these receivables are reported as accounts receivable, notes receivable, or other receivables on a balance sheet.

**a.** Sold merchandise on account for $64,000 to a customer.

**b.** Received a promissory note of $57,000 for services performed.

**c.** Advanced $10,000 to an employee.

*Record basic accounts receivable transactions.*

**BE9.2 (LO 1)** Record the following transactions on the books of RAS Co.

**a.** On July 1, RAS Co. sold merchandise on account to Waegelein Inc. for $17,200, terms 2/10, n/30.

**b.** On July 8, Waegelein Inc. returned merchandise worth $3,800 to RAS Co.

**c.** On July 11, Waegelein Inc. paid for the merchandise.

*Prepare entry for allowance method and partial balance sheet.*

**BE9.3 (LO 2, 4)** **Financial Statement** During its first year of operations, Gavin Company had credit sales of $3,000,000; $600,000 remained uncollected at year-end. The credit manager estimates that $31,000 of these receivables will become uncollectible.

**a.** Prepare the journal entry to record the estimated uncollectibles.

**b.** Prepare the current assets section of the balance sheet for Gavin Company. Assume that in addition to the receivables it has cash of $90,000, inventory of $130,000, and prepaid insurance of $7,500.

*Prepare entry for write-off; determine cash realizable value.*

**BE9.4 (LO 2)** At the end of 2020, Carpenter Co. has accounts receivable of $700,000 and an allowance for doubtful accounts of $54,000. On January 24, 2021, the company learns that its receivable from Megan Gray is not collectible, and management authorizes a write-off of $6,200.

**a.** Prepare the journal entry to record the write-off.

**b.** What is the cash realizable value of the accounts receivable (1) before the write-off and (2) after the write-off?

*Prepare entries for collection of bad debt write-off.*

**BE9.5 (LO 2)** Assume the same information as BE9.4. On March 4, 2021, Carpenter Co. receives payment of $6,200 in full from Megan Gray. Prepare the journal entries to record this transaction.

*Prepare entry using percentage-of-receivables method.*

**BE9.6 (LO 2)** Kingston Co. uses the percentage-of-receivables basis to record bad debt expense. It estimates that 1% of accounts receivable will become uncollectible. Accounts receivable are $420,000 at the end of the year, and the allowance for doubtful accounts has a credit balance of $1,500.

**a.** Prepare the adjusting journal entry to record bad debt expense for the year.

**b.** If the allowance for doubtful accounts had a debit balance of $800 instead of a credit balance of $1,500, determine the amount to be reported for bad debt expense.

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**BE9.7 (LO 2)** Presented below are two independent transactions. *Prepare entries to dispose of accounts receivable.*

**a.** Tony's Restaurant accepted a Visa card in payment of a $175 lunch bill. The bank charges a 4% fee. What entry should Tony's make?

**b.** Larkin Company sold its accounts receivable of $60,000. What entry should Larkin make, given a service charge of 3% on the amount of receivables sold?

**BE9.8 (LO 3)** Compute interest and find the maturity date for the following notes. *Compute interest and determine maturity dates on notes.*

| | Date of Note | Principal | Interest Rate (%) | Terms |
|---|---|---|---|---|
| **a.** | June 10 | $80,000 | 6% | 60 days |
| **b.** | July 14 | $64,000 | 7% | 90 days |
| **c.** | April 27 | $12,000 | 8% | 75 days |

**BE9.9 (LO 3)** Presented below are data on three promissory notes. Determine the missing amounts. *Determine maturity dates and compute interest and rates on notes.*

| | Date of Note | Terms | Maturity Date | Principal | Annual Interest Rate | Total Interest |
|---|---|---|---|---|---|---|
| **a.** | April 1 | 60 days | ? | $600,000 | 6% | ? |
| **b.** | July 2 | 30 days | ? | 90,000 | ? | $600 |
| **c.** | March 7 | 6 months | ? | 120,000 | 10% | ? |

**BE9.10 (LO 3)** On January 10, 2020, Perez Co. sold merchandise on account to Robertsen Co. for $15,600, n/30. On February 9, Robertsen Co. gave Perez Co. a 10% promissory note in settlement of this account. Prepare the journal entry to record the sale and the settlement of the account receivable. (Omit cost of goods sold entries.) *Prepare entry for notes receivable exchanged for account receivable.*

**BE9.11 (LO 2, 4)** **Financial Statement** During its first year of operations, Fertig Company had credit sales of $3,000,000, of which $400,000 remained uncollected at year-end. The credit manager estimates that $18,000 of these receivables will become uncollectible. *Prepare entry for estimated uncollectibles and classifications, and compute ratios.*

**a.** Prepare the journal entry to record the estimated uncollectibles. (Assume an unadjusted balance of zero in Allowance for Doubtful Accounts.)

**b.** Prepare the current assets section of the balance sheet for Fertig Company, assuming that in addition to the receivables it has cash of $90,000, merchandise inventory of $180,000, and supplies of $13,000.

**c.** Calculate the accounts receivable turnover and average collection period. Assume that average net accounts receivable were $300,000. Explain what these measures tell us.

**BE9.12 (LO 4)** The financial statements of **Minnesota Mining and Manufacturing Company (3M)** report net sales of $20.0 billion. Accounts receivable (net) are $2.7 billion at the beginning of the year and $2.8 billion at the end of the year. Compute 3M's accounts receivable turnover. Compute 3M's average collection period for accounts receivable in days. *Compute ratios to analyze receivables.*

## DO IT! Exercises

**DO IT! 9.1 (LO 1)** On March 1, Lincoln sold merchandise on account to Amelia Company for $28,000, terms 1/10, net 45. On March 6, Amelia returns merchandise with a sales price of $1,000. On March 11, Lincoln receives payment from Amelia for the balance due. Prepare journal entries to record the March transactions on Lincoln's books. (You may ignore cost of goods sold entries and explanations.) *Prepare entries to recognize accounts receivable.*

**DO IT! 9.2a (LO 2)** Gonzalez Company has been in business several years. At the end of the current year, the ledger shows the following: *Prepare entry for uncollectible accounts.*

| | |
|---|---|
| Accounts Receivable | $ 310,000 Dr. |
| Sales Revenue | 2,200,000 Cr. |
| Allowance for Doubtful Accounts | 6,100 Cr. |

Bad debts are estimated to be 5% of accounts receivable. Prepare the entry to adjust Allowance for Doubtful Accounts.

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*Prepare entry for factored accounts.*

**DO IT! 9.2b (LO 2)** Neumann Distributors is a growing company whose ability to raise capital has not been growing as quickly as its expanding assets and sales. Neumann's local banker has indicated that the company cannot increase its borrowing for the foreseeable future. Neumann's suppliers are demanding payment for goods acquired within 30 days of the invoice date, but Neumann's customers are slow in paying for their purchases (60–90 days). As a result, Neumann has a cash flow problem.

Neumann needs $160,000 to cover next Friday's payroll. Its balance of outstanding accounts receivable totals $800,000. To alleviate this cash crunch, the company sells $170,000 of its receivables. Record the entry that Neumann would make. (Assume a 2% service charge.)

*Compute maturity date and interest on note.*

**DO IT! 9.3 (LO 3)** Gentry Wholesalers accepts from Benton Stores a $6,200, 4-month, 9% note dated May 31 in settlement of Benton's overdue account. (a) What is the maturity date of the note? (b) What is the interest payable at the maturity date?

*Compute ratios for receivables.*

**DO IT! 9.4 (LO 4)** In 2020, Wainwright Company has net credit sales of $1,300,000 for the year. It had a beginning accounts receivable (net) balance of $101,000 and an ending accounts receivable (net) balance of $107,000. Compute Wainwright Company's (a) accounts receivable turnover and (b) average collection period in days.

## Exercises

*Prepare entries for recognizing accounts receivable.*

**E9.1 (LO 1)** On January 6, Jacob Co. sells merchandise on account to Harley Inc. for $9,200, terms 1/10, n/30. On January 16, Harley pays the amount due.

### Instructions

Prepare the entries on Jacob Co.'s books to record the sale and related collection. (Omit cost of goods sold entries.)

*Journalize entries related to accounts receivable.*

**E9.2 (LO 1)** Presented below are selected transactions of Molina Company. Molina sells in large quantities to other companies and also sells its product in a small retail outlet.

| | | |
|---|---|---|
| March | 1 | Sold merchandise on account to Dodson Company for $5,000, terms 2/10, n/30. |
| | 3 | Dodson Company returned merchandise worth $500 to Molina. |
| | 9 | Molina collected the amount due from Dodson Company from the March 1 sale. |
| | 15 | Molina sold merchandise for $400 in its retail outlet. The customer used his Molina credit card. |
| | 31 | Molina added 1.5% monthly interest to the customer's credit card balance. |

### Instructions

Prepare journal entries for the transactions above. (Ignore cost of goods sold entries and explanations.)

*Journalize entries for recognizing accounts receivable.*

**E9.3 (LO 1)** Presented below are two independent situations.

### Instructions

**a.** On January 6, Brumbaugh Co. sells merchandise on account to Pryor Inc. for $7,000, terms 2/10, n/30. On January 16, Pryor Inc. pays the amount due. Prepare the entries on Brumbaugh's books to record the sale and related collection. (Omit cost of goods sold entries.)

**b.** On January 10, Andrew Farley uses his Paltrow Co. credit card to purchase merchandise from Paltrow Co. for $9,000. On February 10, Farley is billed for the amount due of $9,000. On February 12, Farley pays $5,000 on the balance due. On March 10, Farley is billed for the amount due, including interest at 1% per month on the unpaid balance as of February 12. Prepare the entries on Paltrow Co.'s books related to the transactions that occurred on January 10, February 12, and March 10. (Omit cost of goods sold entries.)

*Journalize receivables transactions.*

**E9.4 (LO 1, 2)** At the beginning of the current period, Rose Corp. had balances in Accounts Receivable of $200,000 and in Allowance for Doubtful Accounts of $9,000 (credit). During the period, it had net credit sales of $800,000 and collections of $763,000. It wrote off as uncollectible accounts receivable of $7,300. However, a $3,100 account previously written off as uncollectible was recovered before the end of the current period. Uncollectible accounts are estimated to total $25,000 at the end of the period. (Omit cost of goods sold entries.)

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**Instructions**

**a.** Prepare the entries to record sales and collections during the period.

**b.** Prepare the entry to record the write-off of uncollectible accounts during the period.

**c.** Prepare the entries to record the recovery of the uncollectible account during the period.

**d.** Prepare the entry to record bad debt expense for the period.

**e.** Determine the ending balances in Accounts Receivable and Allowance for Doubtful Accounts.

**f.** What is the net realizable value of the receivables at the end of the period?

**E9.5 (LO 2)** The ledger of Costello Company at the end of the current year shows Accounts Receivable $110,000, Sales Revenue $840,000, and Sales Returns and Allowances $20,000.

*Journalize entries to record allowance for doubtful accounts using two different bases.*

**Instructions**

**a.** If Costello uses the direct write-off method to account for uncollectible accounts, journalize the adjusting entry at December 31, assuming Costello determines that L. Dole's $1,400 balance is uncollectible.

**b.** If Allowance for Doubtful Accounts has a credit balance of $2,100 in the trial balance, journalize the adjusting entry at December 31, assuming bad debts are expected to be 10% of accounts receivable.

**c.** If Allowance for Doubtful Accounts has a debit balance of $200 in the trial balance, journalize the adjusting entry at December 31, assuming bad debts are expected to be 6% of accounts receivable.

**E9.6 (LO 2)** Godfreid Company has accounts receivable of $95,400 at March 31, 2020. Credit terms are 2/10, n/30. At March 31, 2020, there is a $2,100 credit balance in Allowance for Doubtful Accounts prior to adjustment. The company uses the percentage-of-receivables basis for estimating uncollectible accounts. The company's estimates of bad debts are as shown below.

*Determine bad debt expense, and prepare the adjusting entry.*

| | Balance, March 31 | | |
|---|---|---|---|
| Age of Accounts | 2020 | 2019 | Estimated Percentage Uncollectible |
| Current | $65,000 | $75,000 | 2% |
| 1–30 days past due | 12,900 | 8,000 | 5 |
| 31–90 days past due | 10,100 | 2,400 | 30 |
| Over 90 days past due | 7,400 | 1,100 | 50 |
| | $95,400 | $86,500 | |

**Instructions**

**a.** Determine the total estimated uncollectibles.

**b.** Prepare the adjusting entry at March 31, 2020, to record bad debt expense.

**c.** Discuss the implications of the changes in the aging schedule from 2019 to 2020.

**E9.7 (LO 2)** At December 31, 2019, Blanda Company had a credit balance of $15,000 in Allowance for Doubtful Accounts. During 2020, Blanda wrote off accounts totaling $11,000. One of those accounts ($1,800) was later collected. At December 31, 2020, an aging schedule indicated that the balance in Allowance for Doubtful Accounts should be $19,000.

*Journalize write-off and recovery.*

**Instructions**

Prepare journal entries to record the 2020 transactions of Blanda Company.

**E9.8 (LO 2)** On December 31, 2020, Ling Co. estimated that 2% of its net accounts receivable of $450,000 will become uncollectible. The company recorded this amount as an addition to Allowance for Doubtful Accounts. The allowance account had a zero balance before adjustment at December 31, 2020. On May 11, 2021, Ling Co. determined that the Jeff Shoemaker account was uncollectible and wrote off $1,100. On June 12, 2021, Shoemaker paid the amount previously written off.

*Journalize percentage-of-receivables basis, write-off, recovery.*

**Instructions**

Prepare the journal entries on December 31, 2020, May 11, 2021, and June 12, 2021.

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*Journalize entries for the sale of accounts receivable.*

**E9.9 (LO 2)** Presented below are two independent situations.

**Instructions**

**a.** On March 3, Kitselman Appliances sells $650,000 of its receivables to Ervay Factors Inc. Ervay Factors assesses a finance charge of 3% of the amount of receivables sold. Prepare the entry on Kitselman Appliances' books to record the sale of the receivables.

**b.** On May 10, Fillmore Company sold merchandise for $3,000 and accepted the customer's America Bank MasterCard. America Bank charges a 4% service charge for credit card sales. Prepare the entry on Fillmore Company's books to record the sale of merchandise.

*Journalize entries for credit card sales.*

**E9.10 (LO 2)** Presented below are two independent situations.

**Instructions**

**a.** On April 2, Jennifer Elston uses her **JCPenney Company** credit card to purchase merchandise from a JCPenney store for $1,500. On May 1, Elston is billed for the $1,500 amount due. Elston pays $500 on the balance due on May 3. Elston receives a bill dated June 1 for the amount due, including interest at 1.0% per month on the unpaid balance as of May 3. Prepare the entries on JCPenney Co.'s books related to the transactions that occurred on April 2, May 3, and June 1.

**b.** On July 4, Spangler's Restaurant accepts a Visa card for a $200 dinner bill. Visa charges a 2% service fee. Prepare the entry on Spangler's books related to this transaction.

*Journalize credit card sales.*

**E9.11 (LO 2)** Colaw Stores accepts both its own and national credit cards. During the year, the following selected summary transactions occurred.

| | | |
|---|---|---|
| Jan. | 15 | Made Colaw credit card sales totaling $18,000. (There were no balances prior to January 15.) |
| | 20 | Made Visa credit card sales (service charge fee 2%) totaling $4,500. |
| Feb. | 10 | Collected $10,000 on Colaw credit card sales. |
| | 15 | Added finance charges of 1.5% to Colaw credit card account balances. |

**Instructions**

Journalize the transactions for Colaw Stores.

*Journalize entries for notes receivable transactions.*

**E9.12 (LO 3)** Elburn Supply Co. has the following transactions related to notes receivable during the last 2 months of 2020. The company does not make entries to accrue interest except at December 31.

| | | |
|---|---|---|
| Nov. | 1 | Loaned $30,000 cash to Manny Lopez on a 12 month, 10% note. |
| Dec. | 11 | Sold goods to Ralph Kremer, Inc., receiving a $6,750, 90-day, 8% note. |
| | 16 | Received a $4,000, 180 day, 9% note in exchange for Joe Fernetti's outstanding accounts receivable. |
| | 31 | Accrued interest revenue on all notes receivable. |

**Instructions**

**a.** Journalize the transactions for Elburn Supply Co. (Ignore entries for cost of goods sold.)

**b.** Record the collection of the Lopez note at its maturity in 2021.

*Journalize entries for notes receivable.*

**E9.13 (LO 3)** Record the following transactions for Redeker Co. in the general journal.

**2020**

| | | |
|---|---|---|
| May | 1 | Received a $9,000, 12-month, 10% note in exchange for Mark Chamber's outstanding accounts receivable. |
| Dec. | 31 | Accrued interest on the Chamber note. |
| Dec. | 31 | Closed the interest revenue account. |

**2021**

| | | |
|---|---|---|
| May | 1 | Received principal plus interest on the Chamber note. (No interest has been accrued in 2021.) |

*Prepare entries for note receivable transactions.*

**E9.14 (LO 3)** Vandiver Company had the following select transactions.

| | | |
|---|---|---|
| Apr. | 1, 2020 | Accepted Goodwin Company's 12-month, 6% note in settlement of a $30,000 account receivable. |
| July | 1, 2020 | Loaned $25,000 cash to Thomas Slocombe on a 9-month, 10% note. |
| Dec. | 31, 2020 | Accrued interest on all notes receivable. |
| Apr. | 1, 2021 | Received principal plus interest on the Goodwin note. |
| Apr. | 1, 2021 | Thomas Slocombe dishonored its note; Vandiver expects it will eventually collect. |

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**Instructions**

Prepare journal entries to record the transactions. Vandiver prepares adjusting entries once a year on December 31.

**E9.15 (LO 3)** On May 2, McLain Company lends $9,000 to Chang, Inc., issuing a 6-month, 7% note. At the maturity date, November 2, Chang indicates that it cannot pay.

*Journalize entries for dishonor of notes receivable.*

**Instructions**

**a.** Prepare the entry to record the issuance of the note.

**b.** Prepare the entry to record the dishonor of the note, assuming that McLain Company expects collection will occur.

**c.** Prepare the entry to record the dishonor of the note, assuming that McLain Company does not expect collection in the future.

**E9.16 (LO 4)** Eileen Corp. had the following balances in receivable accounts at October 31, 2020 (in thousands): Allowance for Doubtful Accounts $52, Accounts Receivable $2,910, Other Receivables $189, and Notes Receivable $1,353.

*Prepare a balance sheet presentation of receivables.*

**Instructions**

Prepare the balance sheet presentation of Eileen Corp.'s receivables in good form.

**E9.17 (LO 4)** Kerwick Company had accounts receivable of $100,000 on January 1, 2020. The only transactions that affected accounts receivable during 2020 were net credit sales of $1,000,000, cash collections of $920,000, and accounts written off of $30,000.

*Compute accounts receivable turnover and average collection period.*

**Instructions**

**a.** Compute the ending balance of accounts receivable.

**b.** Compute the accounts receivable turnover for 2020.

**c.** Compute the average collection period in days.

## Problems: Set A

**P9.1A (LO 1, 2, 4)** At December 31, 2019, House Co. reported the following information on its balance sheet.

*Prepare journal entries related to bad debt expense.*

| | |
|---|---|
| Accounts receivable | $960,000 |
| Less: Allowance for doubtful accounts | 80,000 |

During 2020, the company had the following transactions related to receivables.

| | | |
|---|---|---|
| **1.** | Sales on account | $3,700,000 |
| **2.** | Sales returns and allowances | 50,000 |
| **3.** | Collections of accounts receivable | 2,810,000 |
| **4.** | Write-offs of accounts receivable deemed uncollectible | 90,000 |
| **5.** | Recovery of bad debts previously written off as uncollectible | 29,000 |

**Instructions**

**a.** Prepare the journal entries to record each of these five transactions. Assume that no cash discounts were taken on the collections of accounts receivable.

**b.** Enter the January 1, 2020, balances in Accounts Receivable and Allowance for Doubtful Accounts, post the entries to the two accounts (use T-accounts), and determine the balances.

**c.** Prepare the journal entry to record bad debt expense for 2020, assuming that an aging of accounts receivable indicates that expected bad debts are $115,000.

**d.** Compute the accounts receivable turnover for 2020 assuming the expected bad debt information provided in (c).

b. Accounts receivable $1,710,000
ADA $19,000
c. Bad debt expense $96,000

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*Compute bad debt amounts.*

**P9.2A (LO 2) Writing** Information related to Mingenback Company for 2020 is summarized below.

| | |
|---|---|
| Total credit sales | $2,500,000 |
| Accounts receivable at December 31 | 875,000 |
| Bad debts written off | 33,000 |

**Instructions**

**a.** What amount of bad debt expense will Mingenback Company report if it uses the direct write-off method of accounting for bad debts?

**b.** Assume that Mingenback Company estimates its bad debt expense based on 6% of accounts receivable. What amount of bad debt expense will Mingenback record if it has an Allowance for Doubtful Accounts credit balance of $3,000?

**c.** Assume the same facts as in (b), except that there is a $3,000 debit balance in Allowance for Doubtful Accounts. What amount of bad debt expense will Mingenback record?

**d.** What is the weakness of the direct write-off method of reporting bad debt expense?

*Journalize entries to record transactions related to bad debts.*

**P9.3A (LO 2)** Presented below is an aging schedule for Halleran Company.

Worksheet

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 *fx*

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | | | | Number of Days Past Due | | | |
| 2 | | | Not | | | | |
| 3 | Customer | Total | Yet Due | 1–30 | 31–60 | 61–90 | Over 90 |
| 4 | Anders | $ 22,000 | | $10,000 | $12,000 | | |
| 5 | Blake | 40,000 | $ 40,000 | | | | |
| 6 | Coulson | 57,000 | 16,000 | 6,000 | | $35,000 | |
| 7 | Deleon | 34,000 | | | | | $34,000 |
| 8 | Others | 132,000 | 96,000 | 16,000 | 14,000 | | 6,000 |
| 9 | | $285,000 | $152,000 | $32,000 | $26,000 | $35,000 | $40,000 |
| 10 | Estimated Percentage Uncollectible | | 3% | 6% | 13% | 25% | 50% |
| 11 | Total Estimated Bad Debts | $ 38,610 | $ 4,560 | $ 1,920 | $ 3,380 | $ 8,750 | $20,000 |
| 12 | | | | | | | |

At December 31, 2020, the unadjusted balance in Allowance for Doubtful Accounts is a credit of $12,000.

**Instructions**

a. Bad debt expense $26,610

**a.** Journalize and post the adjusting entry for bad debts at December 31, 2020.

**b.** Journalize and post to the allowance account the following events and transactions in the year 2021.

**1.** On March 31, a $1,000 customer balance originating in 2020 is judged uncollectible.

**2.** On May 31, a check for $1,000 is received from the customer whose account was written off as uncollectible on March 31.

c. Bad debt expense $32,400

**c.** Journalize the adjusting entry for bad debts on December 31, 2021, assuming that the unadjusted balance in Allowance for Doubtful Accounts is a debit of $800 and the aging schedule indicates that total estimated bad debts will be $31,600.

*Journalize transactions related to bad debts.*

**P9.4A (LO 2) Writing** Rigney Inc. uses the allowance method to estimate uncollectible accounts receivable. The company produced the following aging of the accounts receivable at year-end.

Worksheet

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 *fx*

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | | | Number of Days Outstanding | | | | |
| 2 | | | | | | | |
| 3 | | Total | 0–30 | 31–60 | 61–90 | 91–120 | Over 120 |
| 4 | Accounts receivable | 200,000 | 77,000 | 46,000 | 39,000 | 23,000 | 15,000 |
| 5 | % uncollectible | | 1% | 4% | 5% | 8% | 20% |
| 6 | Estimated bad debts | | | | | | |
| 7 | | | | | | | |

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**Instructions**

**a.** Calculate the total estimated bad debts based on the information provided.

a. Tot. est. bad debts $9,400

**b.** Prepare the year-end adjusting journal entry to record the bad debts using the aged uncollectible accounts receivable determined in (a). Assume the current balance in Allowance for Doubtful Accounts is a $8,000 debit.

**c.** Of the above accounts, $5,000 is determined to be specifically uncollectible. Prepare the journal entry to write off the uncollectible account.

**d.** The company collects $5,000 subsequently on a specific account that had previously been determined to be uncollectible in (c). Prepare the journal entry(ies) necessary to restore the account and record the cash collection.

**e.** Comment on how your answers to (a)–(d) would change if Rigney Inc. used 4% of **total** accounts receivable rather than aging the accounts receivable. What are the advantages to the company of aging the accounts receivable rather than applying a percentage to total accounts receivable?

**P9.5A (LO 2) Writing** At December 31, 2020, the trial balance of Darby Company contained the following amounts before adjustment.

*Journalize entries to record transactions related to bad debts.*

| | Debit | Credit |
|---|---|---|
| Accounts Receivable | $385,000 | |
| Allowance for Doubtful Accounts | | $ 1,000 |
| Sales Revenue | | 970,000 |

**Instructions**

**a.** Based on the information given, which method of accounting for bad debts is Darby Company using—the direct write-off method or the allowance method? How can you tell?

**b.** Prepare the adjusting entry at December 31, 2020, for bad debt expense, assuming an aging schedule indicates that $11,750 of accounts receivable will be uncollectible.

b. $10,750

**c.** Repeat part (b) assuming that instead of a credit balance there is a $1,000 debit balance in Allowance for Doubtful Accounts.

**d.** During the next month, January 2021, a $3,000 account receivable is written off as uncollectible. Prepare the journal entry to record the write-off.

**e.** Repeat part (d) assuming that Darby uses the direct write-off method instead of the allowance method in accounting for uncollectible accounts receivable.

**f.** What type of account is Allowance for Doubtful Accounts? How does it affect how accounts receivable is reported on the balance sheet at the end of the accounting period?

**P9.6A (LO 1, 2, 3, 4) Financial Statement** Milton Company closes its books on its July 31 year-end. The company does not make entries to accrue for interest except at its year-end. On June 30, the Notes Receivable account balance is $23,800. Notes Receivable includes the following.

*Prepare entries for various credit card and notes receivable transactions.*

GLS

| Date | Maker | Face Value | Term | Maturity Date | Interest Rate |
|---|---|---|---|---|---|
| April 21 | Coote Inc. | $ 6,000 | 90 days | July 20 | 8% |
| May 25 | Brady Co. | 7,800 | 60 days | July 24 | 10% |
| June 30 | BMG Corp. | 10,000 | 6 months | December 31 | 6% |

During July, the following transactions were completed.

July 5 Made sales of $4,500 on Milton credit cards.
14 Made sales of $600 on Visa credit cards. The credit card service charge is 3%.
20 Received payment in full from Coote Inc. on the amount due.
24 Received payment in full from Brady Co. on the amount due.

**Instructions**

**a.** Journalize the July transactions and the July 31 adjusting entry for accrued interest receivable. (Interest is computed using 360 days; omit cost of goods sold entries.)

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b. A/R bal. $4,500

c. Tot. receivables $14,550

**b.** Enter the balances at July 1 in the receivable accounts and post the entries to all of the receivable accounts. (Use T-accounts.)

**c.** Show the balance sheet presentation of the receivable accounts at July 31.

*Prepare entries for various receivable transactions.*

**P9.7A (LO 1, 2, 3)** On January 1, 2020, Harter Company had Accounts Receivable $139,000, Notes Receivable $25,000, and Allowance for Doubtful Accounts $13,200. The note receivable is from Willingham Company. It is a 4-month, 9% note dated December 31, 2019. Harter Company prepares financial statements annually at December 31. During the year, the following selected transactions occurred.

| | | |
|---|---|---|
| Jan. | 5 | Sold $20,000 of merchandise to Sheldon Company, terms n/15. |
| | 20 | Accepted Sheldon Company's $20,000, 3-month, 8% note for balance due. |
| Feb. | 18 | Sold $8,000 of merchandise to Patwary Company and accepted Patwary's $8,000, 6-month, 9% note for the amount due. |
| Apr. | 20 | Collected Sheldon Company note in full. |
| | 30 | Received payment in full from Willingham Company on the amount due. |
| May | 25 | Accepted Potter Inc.'s $6,000, 3-month, 7% note in settlement of a past-due balance on account. |
| Aug. | 18 | Received payment in full from Patwary Company on note due. |
| | 25 | The Potter Inc. note was dishonored. Potter Inc. is not bankrupt; future payment is anticipated. |
| Sept. | 1 | Sold $12,000 of merchandise to Stanbrough Company and accepted a $12,000, 6-month, 10% note for the amount due. |

### Instructions

Journalize the transactions. (Omit cost of goods sold entries.)

*Calculate and interpret various ratios.*

**P9.8A (LO 4)** Suppose the amounts presented here are basic financial information (in millions) from the 2020 annual reports of **Nike** and **adidas**.

| | Nike | adidas |
|---|---|---|
| Sales revenue | $19,176.1 | $10,381 |
| Allowance for doubtful accounts, beginning | 78.4 | 119 |
| Allowance for doubtful accounts, ending | 110.8 | 124 |
| Accounts receivable balance (gross), beginning | 2,873.7 | 1,743 |
| Accounts receivable balance (gross), ending | 2,994.7 | 1,553 |

### Instructions

Calculate the accounts receivable turnover and average collection period for both companies. Comment on the difference in their collection experiences.

*Prepare financial statements.*

**P9.9A (LO 4)** **Financial Statement** The adjusted trial balance of Gibson Company for the year ended December 31, 2020, is as follows:

| | Debit | Credit |
|---|---|---|
| Cash | $ 6,400 | |
| Accounts Receivable | 2,700 | |
| Notes Receivable | 6,300 | |
| Inventory | 10,000 | |
| Equipment | 7,500 | |
| Allowance for Doubtful Accounts | | $ 300 |
| Accumulated Depreciation—Equipment | | 1,000 |
| Notes Payable | | 1,100 |
| Accounts Payable | | 600 |
| Common Stock | | 17,000 |
| Retained Earnings | | 11,000 |
| Dividends | 1,000 | |
| Sales Revenue | | 13,000 |
| Interest Revenue | | 100 |
| Cost of Goods Sold | 8,000 | |
| Salary and Wages Expense | 1,400 | |
| Rent Expense | 700 | |
| Bad Debt Expense | 60 | |
| Service Charge Expense | 40 | |
| | $44,100 | $44,100 |

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### Instructions

Prepare a multiple-step income statement, retained earnings statement, and a classified balance sheet. The notes payable is due on January 10, 2021.

Retained earnings $12,900

## Continuing Case

### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 8.)

**CC9** One of Natalie's friends, Curtis Lesperance, runs a coffee shop where he sells specialty coffees and prepares and sells muffins and cookies. He is eager to buy one of Natalie's fine European mixers, which would enable him to make larger batches of muffins and cookies. However, Curtis cannot afford to pay for the mixer for at least 30 days. He asks Natalie if she would be willing to sell him the mixer on credit. Natalie comes to you for advice.

*Go to* **WileyPLUS** *for complete case details and instructions.*

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## Ethics Case

**EC9** The controller of Diaz Co. believes that the yearly allowance for doubtful accounts for Diaz Co. should be 2% of its accounts receivable balance at the end of the year. The president of Diaz Co., nervous that the owners might expect the company to sustain its 10% growth rate, suggests that the controller increase the allowance for doubtful accounts to 4%. The president thinks that the lower net income, which reflects a lower growth rate, will be a more sustainable rate for Diaz Co.

### Instructions

**a.** Who are the stakeholders in this case?

**b.** Does the president's request pose an ethical dilemma for the controller?

**c.** Should the controller be concerned with Diaz Co.'s growth rate? Explain your answer.

## Comprehensive Accounting Cycle Review

**ACR9** **Financial Statement** Winter Company's balance sheet at December 31, 2019, is presented below.

**Winter Company**
**Balance Sheet**
**December 31, 2019**

| | | | |
|---|---|---|---|
| Cash | $13,100 | Accounts payable | $ 8,750 |
| Accounts receivable | 19,780 | Owner's capital | 32,730 |
| Allowance for doubtful accounts | (800) | | $41,480 |
| Inventory | 9,400 | | |
| | $41,480 | | |

During January 2020, the following transactions occurred. Winter uses the perpetual inventory method.

Jan. 1 Winter accepted a 4-month, 8% note from Merando Company in payment of Merando's $1,200 account.

3 Winter wrote off as uncollectible the accounts of Inwood Corporation ($450) and Goza Company ($280).

8 Winter purchased $17,200 of inventory on account.

11 Winter sold for $28,000 on account inventory that cost $19,600.

15 Winter sold inventory that cost $700 to Mark Lauber for $1,000. Lauber charged this amount on his Visa First Bank card. The service fee charged Winter by First Bank is 3%.

17 Winter collected $22,900 from customers on account.

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21 Winter paid $14,300 on accounts payable.
24 Winter received payment in full ($280) from Goza Company on the account written off on January 3.
27 Winter purchased supplies for $1,400 cash.
31 Winter paid other operating expenses, $3,718.

Adjustment data:

1. Interest is recorded for the month on the note from January 1.
2. Bad debts are expected to be 6% of the January 31, 2020, accounts receivable.
3. A count of supplies on January 31, 2020, reveals that $560 remains unused.

### Instructions

(You may want to set up T-accounts to determine ending balances.)

**a.** Prepare journal entries for the transactions listed above and adjusting entries. (Include entries for cost of goods sold using the perpetual system.)

b. Totals $74,765

**b.** Prepare an adjusted trial balance at January 31, 2020.

c. Tot. assets $47,473

**c.** Prepare an income statement and an owner's equity statement for the month ending January 31, 2020, and a classified balance sheet as of January 31, 2020.

## Expand Your Critical Thinking

### Financial Reporting Problem: RLF Company

**CT9.1** RLF Company sells office equipment and supplies to many organizations in the city and surrounding area on contract terms of 2/10, n/30. In the past, over 75% of the credit customers have taken advantage of the discount by paying within 10 days of the invoice date.

The number of customers taking the full 30 days to pay has increased within the last year. Current indications are that less than 60% of the customers are now taking the discount. Bad debts as a percentage of gross credit sales have risen from the 2.5% provided in past years to about 4.5% in the current year.

The company's Finance Committee has requested more information on the collections of accounts receivable. The controller responded to this request with the report reproduced below.

**RLF Company**
**Accounts Receivable Collections**
**May 31, 2020**

The fact that some credit accounts will prove uncollectible is normal. Annual bad debt write-offs have been 2.5% of gross credit sales over the past 5 years. During the last fiscal year, this percentage increased to slightly less than 4.5%. The current Accounts Receivable balance is $1,400,000. The condition of this balance in terms of age and probability of collection is as follows.

| Proportion of Total | Age Categories | Probability of Collection |
|---|---|---|
| 60% | not yet due | 98% |
| 22% | less than 30 days past due | 96% |
| 9% | 30 to 60 days past due | 94% |
| 5% | 61 to 120 days past due | 91% |
| $2^1/_2$% | 121 to 180 days past due | 75% |
| $1^1/_2$% | over 180 days past due | 30% |

Allowance for Doubtful Accounts had a credit balance of $29,500 on June 1, 2019. RLF has provided for a monthly bad debt expense accrual during the current fiscal year based on the assumption that 4.5% of gross credit sales will be uncollectible. Total gross credit sales for the 2019–2020 fiscal year amounted to $2,900,000. Write-offs of bad accounts during the year totaled $102,000.

### Instructions

**a.** Prepare an accounts receivable aging schedule for RLF Company using the age categories identified in the controller's report to the Finance Committee showing the following.

1. The amount of accounts receivable outstanding for each age category and in total.

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2. The estimated amount that is uncollectible for each category and in total.

**b.** Compute the amount of the year-end adjustment necessary to bring Allowance for Doubtful Accounts to the balance indicated by the age analysis. Then prepare the necessary journal entry to adjust the accounting records.

**c.** In a recessionary environment with tight credit and high interest rates:

1. Identify steps RLF Company might consider to improve the accounts receivable situation.
2. Then evaluate each step identified in terms of the risks and costs involved.

## Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT9.2** **PepsiCo, Inc.**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

### Instructions

**a.** Based on the information in these financial statements, compute the following 2015 ratios for each company. (Assume all sales are credit sales and that PepsiCo's receivables on its balance sheet are all trade receivables.)

1. Accounts receivable turnover.
2. Average collection period for receivables.

**b.** What conclusions about managing accounts receivable can you draw from these data?

## Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT9.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

### Instructions

**a.** Based on the information in these financial statements, compute the following ratios for each company (for the most recent year shown). (Assume all sales are credit sales.)

1. Accounts receivable turnover.
2. Average collection period for receivables.

**b.** What conclusions about managing accounts receivable can you draw from these data?

## Real-World Focus

**CT9.4** **Purpose:** To learn more about factoring.

### Instructions

Search the Internet under "commercial capital factoring" and then go to the corresponding **Commercial Capital LLC** website. Click on **Invoice Factoring** and answer the following questions.

**a.** What are some of the benefits of factoring?

**b.** What is the range of the percentages of the typical discount rate?

**c.** If a company factors its receivables, what percentage of the value of the receivables can it expect to receive from the factor in the form of cash, and how quickly will it receive the cash?

## Decision-Making Across the Organization

**CT9.5** Carol and Sam Foyle own Campus Fashions. From its inception Campus Fashions has sold merchandise on either a cash or credit basis, but no credit cards have been accepted. During the past several months, the Foyles have begun to question their sales policies. First, they have lost some sales because of refusing to accept credit cards. Second, representatives of two metropolitan banks have been persuasive in almost convincing them to accept their national credit cards. One bank, City National Bank, has stated that its credit card fee is 4%.

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The Foyles decide that they should determine the cost of carrying their own credit sales. From the accounting records of the past 3 years, they accumulate the following data.

| | 2021 | 2020 | 2019 |
|---|---|---|---|
| Net credit sales | $500,000 | $550,000 | $400,000 |
| Collection agency fees for slow-paying customers | 2,450 | 2,500 | 2,300 |
| Salary of part-time accounts receivable clerk | 4,100 | 4,100 | 4,100 |

Uncollectible account expense is 1.6% of net credit sales, billing and mailing costs 0.5%, and credit investigation fee on new customers is 0.15%.

Carol and Sam also determine that the average accounts receivable balance outstanding during the year is 5% of net credit sales. The Foyles estimate that they could earn an average of 8% annually on cash invested in other business opportunities.

### Instructions

With the class divided into groups, answer the following.

**a.** Prepare a table showing, for each year, total credit and collection expenses in dollars and as a percentage of net credit sales.

**b.** Determine the net credit and collection expense in dollars and as a percentage of sales after considering the revenue not earned from other investment opportunities.

**c.** Discuss both the financial and nonfinancial factors that are relevant to the decision.

## Communication Activity

**CT9.6** Jill Epp, a friend of yours, overheard a discussion at work about changes her employer wants to make in accounting for uncollectible accounts. Jill knows little about accounting, and she asks you to help make sense of what she heard. Specifically, she asks you to explain the differences between the percentage-of-receivables and the direct write-off methods for uncollectible accounts.

### Instructions

In a letter of one page (or less), explain to Jill the two methods of accounting for uncollectibles. Be sure to discuss differences among these methods.

## All About You

**CT9.7** Credit card usage in the United States is substantial. Many startup companies use credit cards as a way to help meet short-term financial needs. The most common forms of debt for startups are use of credit cards and loans from relatives.

Suppose that you start up Brothers Sandwich Shop. You invested your savings of $20,000 and borrowed $70,000 from your relatives. Although sales in the first few months are good, you see that you may not have sufficient cash to pay expenses and maintain your inventory at acceptable levels, at least in the short term. You decide you may need to use one or more credit cards to fund the possible cash shortfall.

### Instructions

**a.** Go to the Internet and find two sources that provide insight into how to compare credit card terms.

**b.** Develop a list, in descending order of importance, as to what features are most important to you in selecting a credit card for your business.

**c.** Examine the features of your present credit card. (If you do not have a credit card, select a likely one online for this exercise.) Given your analysis above, what are the three major disadvantages of your present credit card?

## FASB Codification Activity

**CT9.8** If your school has a subscription to the FASB Codification, log in and prepare responses to the following.

**a.** How are receivables defined in the Codification?

**b.** What are the conditions under which losses from uncollectible receivables (Bad Debt Expense) should be reported?

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# A Look at IFRS

**LEARNING OBJECTIVE 5**

Compare the accounting for receivables under GAAP and IFRS.

The basic accounting and reporting issues related to the recognition, measurement, and disposition of receivables are essentially the same between IFRS and GAAP.

## Key Points

Following are the key similarities and differences between GAAP and IFRS as related to the accounting for receivables.

### Similarities

- The recording of receivables, recognition of sales returns and allowances and sales discounts, and the allowance method to record bad debts are the same between IFRS and GAAP.
- Both IFRS and GAAP often use the term impairment to indicate that a receivable or a percentage of receivables may not be collected.
- The FASB and IASB have worked to implement fair value measurement (the amount they currently could be sold for) for financial instruments, such as receivables. Both Boards have faced bitter opposition from various factions.

### Differences

- Although IFRS implies that receivables with different characteristics should be reported separately, there is no standard that mandates this segregation.
- IFRS and GAAP differ in the criteria used to determine how to record a factoring transaction. IFRS uses a combination approach focused on risks and rewards and loss of control. GAAP uses loss of control as the primary criterion. In addition, IFRS permits partial derecognition of receivables; GAAP does not.

## Looking to the Future

The question of recording fair values for financial instruments will continue to be an important issue to resolve as the Boards work toward convergence. Both the IASB and the FASB have indicated that they believe that financial statements would be more transparent and understandable if companies recorded and reported all financial instruments at fair value. That said, in *IFRS 9*, which was issued in 2009, the IASB created a split model, where some financial instruments are recorded at fair value, but other financial assets, such as loans and receivables, can be accounted for at amortized cost if certain criteria are met. Critics say that this can result in two companies with identical securities accounting for those securities in different ways. A proposal by the FASB would require that practically all equity instruments be reported at fair value, and that debt instruments may or may not be reported at fair value depending on whether certain criteria are met.

# IFRS Practice

## IFRS Self-Test Questions

1. Which of the following statements is **false**?
   **a.** Receivables include equity securities purchased by the company.
   **b.** Receivables include credit card receivables.
   **c.** Receivables include amounts owed by employees as a result of company loans to employees.
   **d.** Receivables include amounts resulting from transactions with customers.
2. In recording a factoring transaction:
   **a.** IFRS focuses on loss of control.
   **b.** GAAP focuses on loss of control and risks and rewards.
   **c.** IFRS and GAAP allow partial derecognition.
   **d.** IFRS allows partial derecognition.
3. Under IFRS:
   **a.** the entry to record estimated uncollected accounts is the same as GAAP.
   **b.** it is always acceptable to use the direct write-off method.
   **c.** all financial instruments are recorded at fair value.
   **d.** None of the above.

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## International Financial Reporting Problem: Louis Vuitton

**IFRS9.1** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

### Instructions

Use the company's annual report to answer the following questions.

**a.** What is the accounting policy related to accounting for trade accounts receivable?

**b.** According to the notes to the financial statements, what accounted for the difference between gross trade accounts receivable and net accounts receivable?

**c.** According to the notes to the financial statements, what was the major reason why the balance in receivables increased relative to the previous year?

**d.** Using information in the notes to the financial statements, determine what percentage the provision for impairment of receivables was as a percentage of total trade receivables for 2015 and 2014. How did the ratio change from 2014 to 2015, and what does this suggest about the company's receivables?

### Answers to IFRS Self-Test Questions

**1.** a **2.** d **3.** a

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# Plant Assets, Natural Resources, and Intangible Assets

## Chapter Preview

The accounting for long-term assets has important implications for a company's reported results. In this chapter, we explain the application of the historical cost principle of accounting to property, plant, and equipment, such as **Rent-A-Wreck** vehicles, as well as to natural resources and intangible assets, such as the "Rent-A-Wreck" trademark. We also describe the methods that companies may use to allocate an asset's cost over its useful life. In addition, we discuss the accounting for expenditures incurred during the useful life of assets, such as the cost of replacing tires and brake pads on rental cars.

## Feature Story

### How Much for a Ride to the Beach?

It's spring break. Your plane has landed, you've finally found your bags, and you're dying to hit the beach—but first you need a "vehicular unit" to get you there. As you turn away from baggage claim, you see a long row of rental agency booths. Many are names that you know—**Hertz**, **Avis**, and **Budget**. But a booth at the far end catches your eye—**Rent-A-Wreck**. Now there's a company making a clear statement!

Any company that relies on equipment to generate revenues must make decisions about what kind of equipment to buy, how long to keep it, and how vigorously to maintain it. Rent-A-Wreck has decided to rent used rather than new cars and trucks. It rents these vehicles across the United States,

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Europe, and Asia. While the big-name agencies push vehicles with that "new car smell," Rent-A-Wreck competes on price.

Rent-A-Wreck's message is simple: Rent a used car and save some cash. It's not a message that appeals to everyone. If you're a marketing executive wanting to impress a big client, you probably don't want to pull up in a Rent-A-Wreck car. But if you want to get from point A to point B for the minimum cash per mile, then Rent-A-Wreck is playing your tune. The company's message seems to be getting across to the right clientele. Revenues have increased significantly.

When you rent a car from Rent-A-Wreck, you are renting from an independent businessperson. This owner has paid a "franchise fee" for the right to use the Rent-A-Wreck name. In order to gain a franchise, he or she must meet financial and other criteria, and must agree to run the rental agency according to rules prescribed by Rent-A-Wreck. Some of these rules require that each franchise maintain its cars in a reasonable fashion. This ensures that, though you won't be cruising down Daytona Beach's Atlantic Avenue in a Mercedes convertible, you can be reasonably assured that you won't be calling a tow truck.

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Explain the accounting for plant asset expenditures. | • Determining the cost of plant assets<br>• Expenditures during useful life | **DO IT! 1** Cost of Plant Assets |
| **LO 2** Apply depreciation methods to plant assets. | • Factors in computing depreciation<br>• Depreciation methods<br>• Depreciation and income taxes<br>• Revising periodic depreciation<br>• Impairments | **DO IT! 2a** Straight-Line Depreciation<br>**2b** Revised Depreciation |
| **LO 3** Explain how to account for the disposal of plant assets. | • Retirement of plant assets<br>• Sale of plant assets | **DO IT! 3** Plant Asset Disposal |
| **LO 4** Describe how to account for natural resources and intangible assets. | • Natural resources<br>• Depletion<br>• Intangible assets<br>• Accounting for intangible assets<br>• Research and development costs | **DO IT! 4** Classification Concepts |
| **LO 5** Discuss how plant assets, natural resources, and intangible assets are reported and analyzed. | • Presentation<br>• Analysis | **DO IT! 5** Asset Turnover |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

# Plant Asset Expenditures

**LEARNING OBJECTIVE 1**

Explain the accounting for plant asset expenditures.

**Plant assets** are resources that have three characteristics. They have a physical substance (a definite size and shape), are used in the operations of a business, and are not intended for sale to customers. They are also called **property, plant, and equipment**; **plant and equipment**;

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and **fixed assets**. These assets are expected to be of use to the company for a number of years. Except for land, plant assets decline in service potential over their useful lives.

Because plant assets play a key role in ongoing operations, companies keep plant assets in good operating condition. They also replace worn-out or outdated plant assets, and expand productive resources as needed. Many companies have substantial investments in plant assets. **Illustration 10.1** shows the percentages of plant assets in relation to total assets of companies in a number of industries.

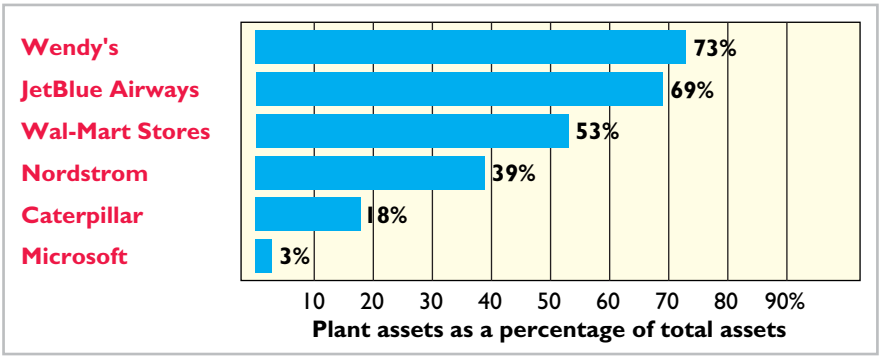


**ILLUSTRATION 10.1**
**Percentages of plant assets in relation to total assets**

# Determining the Cost of Plant Assets

The historical cost principle requires that companies record plant assets at cost. Thus, Rent-A-Wreck records its vehicles at cost. **Cost consists of all expenditures necessary to acquire the asset and make it ready for its intended use.** For example, the cost of factory machinery includes the purchase price, freight costs paid by the purchaser, and installation costs. Once cost is established, the company uses that amount as the basis of accounting for the plant asset over its useful life.

In the following sections, we explain the application of the historical cost principle to each of the major classes of plant assets.

## Land

Companies often use **land** as a building site for a manufacturing plant or office building. The cost of land includes (1) the cash purchase price, (2) closing costs such as title and attorney's fees, (3) real estate brokers' commissions, and (4) accrued property taxes and other liens assumed by the purchaser. For example, if the cash price is $50,000 and the purchaser agrees to pay accrued taxes of $5,000, the cost of the land is $55,000.

Companies record as debits (increases) to the Land account all necessary costs incurred to make land **ready for its intended use** (see Helpful Hint). When a company acquires vacant land, these costs include expenditures for clearing, draining, filling, and grading. Sometimes the land has a building on it that must be removed before construction of a new building. In this case, the company debits to the Land account all demolition and removal costs, less any proceeds from salvaged materials.

**HELPFUL HINT**
**Management's intended use is important in applying the historical cost principle.**

To illustrate, assume that Hayes Company acquires real estate at a cash cost of $100,000. The property contains an old warehouse that is razed at a net cost of $6,000 ($7,500 in costs less $1,500 proceeds from salvaged materials). Additional expenditures are the attorney's fee, $1,000, and the real estate broker's commission, $8,000. The cost of the land is $115,000, computed as shown in **Illustration 10.2**.

**Land**

| | |
|---|---|
| Cash price of property | $100,000 |
| Net removal cost of warehouse ($7,500 − $1,500) | 6,000 |
| Attorney's fee | 1,000 |
| Real estate broker's commission | 8,000 |
| **Cost of land** | **$115,000** |

**ILLUSTRATION 10.2**
**Computation of cost of land**

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| A | = | L | + | OE |
|---|---|---|---|---|
| +115,000 | | | | |
| −115,000 | | | | |

**Cash Flows**
−115,000

Hayes makes the following entry to record the acquisition of the land.

| | | |
|---|---|---|
| Land | 115,000 | |
| Cash | | 115,000 |
| (To record purchase of land) | | |

## Land Improvements

**Land improvements** are structural additions with limited lives that are made to land. Examples are driveways, parking lots, fences, landscaping, and underground sprinklers. The cost of land improvements includes all expenditures necessary to make the improvements ready for their intended use. For example, the cost of a new parking lot for **Home Depot** includes the amount paid for paving, fencing, and lighting. Thus, Home Depot debits to Land Improvements the total of all of these costs.

Land improvements have limited useful lives, and their maintenance and replacement are the responsibility of the company. As a result, companies expense (depreciate) the cost of land improvements over their useful lives.

## Buildings

**Buildings** are facilities used in operations, such as stores, offices, factories, warehouses, and airplane hangars. Companies debit to the Buildings account all necessary expenditures related to the purchase or construction of a building. When a building is **purchased**, such costs include the purchase price, closing costs (attorney's fees, title insurance, etc.), and real estate broker's commission. Costs to make the building ready for its intended use include expenditures for remodeling and replacing or repairing the roof, floors, electrical wiring, and plumbing. When a new building is **constructed**, its cost consists of the contract price plus payments for architects' fees, building permits, and excavation costs.

In addition, companies charge certain interest costs to the Buildings account. Interest costs incurred to finance the project are included in the cost of the building when a significant period of time is required to get the building ready for use. In these circumstances, interest costs are considered as necessary as materials and labor. However, the inclusion of interest costs in the cost of a constructed building is **limited to interest costs incurred during the construction period**. When construction has been completed, the company records subsequent interest payments on funds borrowed to finance the construction as debits (increases) to Interest Expense.

## Equipment

**Equipment** includes assets used in operations, such as store check-out counters, office furniture, factory machinery, delivery trucks, and airplanes. The cost of equipment, such as **Rent-A-Wreck** vehicles, consists of the cash purchase price, sales taxes, freight charges, and insurance during transit paid by the purchaser. It also includes expenditures required in assembling, installing, and testing the unit. However, Rent-A-Wreck does not include motor vehicle licenses and accident insurance on company vehicles in the cost of equipment. These costs represent **annual recurring expenditures and do not benefit future periods**. Thus, they are treated as **expenses** as they are incurred.

To illustrate, assume Merten Company purchases factory machinery at a cash price of $50,000. Related expenditures are for sales taxes $3,000, insurance during shipping $500, and installation and testing $1,000. The cost of the factory machinery is $54,500, as computed in **Illustration 10.3**.

**ILLUSTRATION 10.3**
**Computation of cost of factory machinery**

| Factory Machinery | |
|---|---|
| Cash price | $50,000 |
| Sales taxes | 3,000 |
| Insurance during shipping | 500 |
| Installation and testing | 1,000 |
| **Cost of factory machinery** | **$54,500** |

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Merten makes the following summary entry to record the purchase and related expenditures.

| | | |
|---|---|---|
| Equipment | 54,500 | |
| Cash | | 54,500 |
| (To record purchase of factory machinery) | | |

A = L + OE
+54,500
−54,500
Cash Flows
−54,500

For another example, assume that Lenard Company purchases a delivery truck at a cash price of $22,000. Related expenditures consist of sales taxes $1,320, painting and lettering $500, motor vehicle license $80, and a three-year accident insurance policy $1,600. The cost of the delivery truck is $23,820, computed as shown in **Illustration 10.4**.

**ILLUSTRATION 10.4**
**Computation of cost of delivery truck**

| Delivery Truck | |
|---|---|
| Cash price | $22,000 |
| Sales taxes | 1,320 |
| Painting and lettering | 500 |
| **Cost of delivery truck** | **$23,820** |

Lenard treats the cost of the motor vehicle license as an expense and the cost of the insurance policy as a prepaid asset. Thus, Lenard makes the following entry to record the purchase of the truck and related expenditures:

| | | |
|---|---|---|
| Equipment | 23,820 | |
| License Expense | 80 | |
| Prepaid Insurance | 1,600 | |
| Cash | | 25,500 |
| (To record purchase of delivery truck and related expenditures) | | |

A = L + OE
+23,820
−80 Exp
+ 1,600
−25,500
Cash Flows
−25,500

## Expenditures During Useful Life

During the useful life of a plant asset, a company may incur costs for ordinary repairs, additions, or improvements. **Ordinary repairs** are expenditures to **maintain** the operating efficiency and productive life of the unit. They usually are small amounts that occur frequently. Examples are motor tune-ups and oil changes, the painting of buildings, and the replacing of worn-out gears on machinery. Companies record such repairs as debits to Maintenance and Repairs Expense as they are incurred. Because they are immediately charged as an expense against revenues, these costs are often referred to as **revenue expenditures**.

In contrast, **additions and improvements** are costs incurred to **increase** the operating efficiency, productive capacity, or useful life of a plant asset. They are usually material in amount and occur infrequently. Additions and improvements increase the company's investment in productive facilities. Companies generally debit these amounts to the plant asset affected. They are often referred to as **capital expenditures**.

Companies must use good judgment in deciding between a revenue expenditure and capital expenditure. For example, assume that Rodriguez Co. purchases a number of wastepaper baskets. The proper accounting would appear to be to capitalize and then depreciate these wastepaper baskets over their useful life. However, Rodriguez will generally expense these wastepaper baskets immediately. This practice is justified on the basis of **materiality**. Materiality refers to the impact of an item's size on a company's financial operations. The **materiality concept** states that if an item would not make a difference in decision-making, the company does not have to follow GAAP in reporting that item.

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## Anatomy of a Fraud

Bernie Ebbers was the founder and CEO of the phone company **WorldCom**. The company engaged in a series of increasingly large, debt-financed acquisitions of other companies. These acquisitions made the company grow quickly, which made the stock price increase dramatically. However, because the acquired companies all had different accounting systems, WorldCom's financial records were a mess. When WorldCom's performance started to flatten out, Bernie coerced WorldCom's accountants to engage in a number of fraudulent activities to make net income look better than it really was and thus prop up the stock price. One of these frauds involved treating $7 billion of line costs as capital expenditures. The line costs, which were rental fees paid to other phone companies to use their phone lines, had always been properly expensed in previous years. Capitalization delayed expense recognition to future periods and thus boosted current-period profits.

### Total take: $7 billion

#### The Missing Controls

**Documentation procedures.** The company's accounting system was a disorganized collection of non-integrated systems, which resulted from a series of corporate acquisitions. Top management took advantage of this disorganization to conceal its fraudulent activities.

**Independent internal verification.** A fraud of this size should have been detected by a routine comparison of the actual physical assets with the list of physical assets shown in the accounting records.

## Accounting Across the Organization

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### Many U.S. Firms Use Leases

Leasing is big business for U.S. companies. For example, business investment in equipment in a recent year totaled $800 billion. Leasing accounted for about 33% of all business investments ($264 billion).

Who does the most leasing? Interestingly, major banks such as **Continental Bank**, **J.P. Morgan Leasing**, and **US Bancorp Equipment Finance** are the major lessors. Also, many companies have established separate leasing companies, such as **Boeing Capital Corporation**, **Dell Financial Services**, and **John Deere Capital Corporation**. And, as an excellent example of the magnitude of leasing, leased planes account for nearly 40% of the U.S. fleet of commercial airlines. **Lease Finance Corporation** in Los Angeles owns more planes than any airline in the world. Leasing is also becoming increasingly common in the hotel industry. **Marriott**, **Hilton**, and **InterContinental** are choosing to lease hotels that are owned by someone else.

**Why might airline managers choose to lease rather than purchase their planes? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 1 | Cost of Plant Assets

Assume that Drummond Heating and Cooling Co. purchases a delivery truck for $15,000 cash, plus sales taxes of $900 and delivery costs of $500. The buyer also pays $200 for painting and lettering, $600 for an annual insurance policy, and $80 for a motor vehicle license. Explain how each of these costs would be accounted for.

**ACTION PLAN**

- Identify expenditures made in order to get delivery equipment ready for its intended use.
- Treat operating costs as expenses.

### Solution

The first four payments ($15,000 purchase price, $900 sales taxes, $500 delivery costs, and $200 painting and lettering) are expenditures necessary to make the truck ready for its intended use. Thus, the cost of the truck is $16,600. The payments for insurance and the license are operating costs incurred annually and therefore are expensed.

Related exercise material: **BE10.1, BE10.2, BE10.3, DO IT! 10.1, E10.1, E10.2, and E10.3.**

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# Depreciation Methods

**LEARNING OBJECTIVE 2**

Apply depreciation methods to plant assets.

As explained in Chapter 3, **depreciation is the process of allocating to expense the cost of a plant asset over its useful (service) life in a rational and systematic manner**. Cost allocation enables companies to properly match expenses with revenues in accordance with the expense recognition principle, as shown in Illustration 10.5.

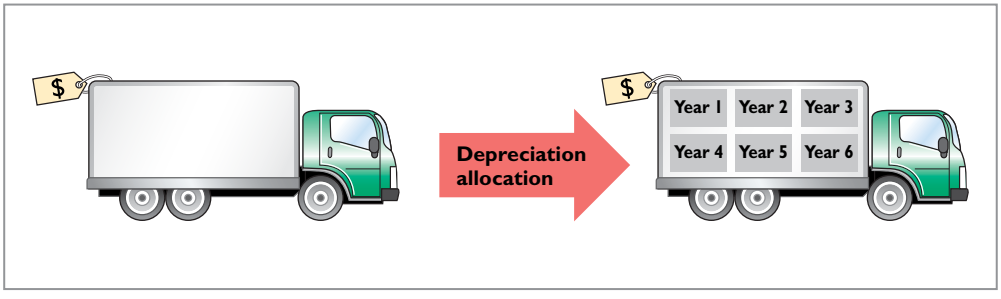


**ILLUSTRATION 10.5**
**Depreciation as a cost allocation concept**

It is important to understand that **depreciation is a process of cost allocation**. **It is not a process of asset valuation.** No attempt is made to measure the change in an asset's fair value during ownership. So, the **book value** (cost less accumulated depreciation) of a plant asset may be quite different from its **fair value**. In fact, if an asset is fully depreciated, it can have a zero book value but still have a fair value (see Ethics Note).

Depreciation applies to three classes of plant assets: land improvements, buildings, and equipment. Each asset in these classes is considered to be a **depreciable asset**. Why? Because the usefulness to the company and revenue-producing ability of each asset will decline over the asset's useful life. Depreciation **does not apply to land** because its usefulness and revenue-producing ability generally remain intact over time. In fact, in many cases, the usefulness of land is greater over time because of the scarcity of good land sites. Thus, **land is not a depreciable asset**.

During a depreciable asset's useful life, its revenue-producing ability declines because of **wear and tear**. A delivery truck that has been driven 100,000 miles will be less useful to a company than one driven only 800 miles.

Revenue-producing ability may also decline because of obsolescence. **Obsolescence** is the process of becoming out of date before the asset physically wears out. For example, major airlines moved from Chicago's Midway Airport to Chicago-O'Hare International Airport because Midway's runways were too short for jumbo jets. Similarly, many companies replace their computers long before they originally planned to do so because improvements in new computing technology make the old computers obsolete.

**Recognizing depreciation on an asset does not result in an accumulation of cash for replacement of the asset.** The balance in Accumulated Depreciation represents the total amount of the asset's cost that the company has charged to expense. **It is not a cash fund.**

Note that the concept of depreciation is consistent with the going concern assumption. The **going concern assumption** states that the company will continue in operation for the foreseeable future. If a company does not use a going concern assumption, then plant assets should be stated at their fair value. In that case, depreciation of these assets is not needed.

**ETHICS NOTE**

**When a business is acquired, proper allocation of the purchase price to various asset classes is important since different depreciation treatments can materially affect income. For example, buildings are depreciated, but land is not.**

## Factors in Computing Depreciation

Three factors affect the computation of depreciation, as shown in Illustration 10.6.

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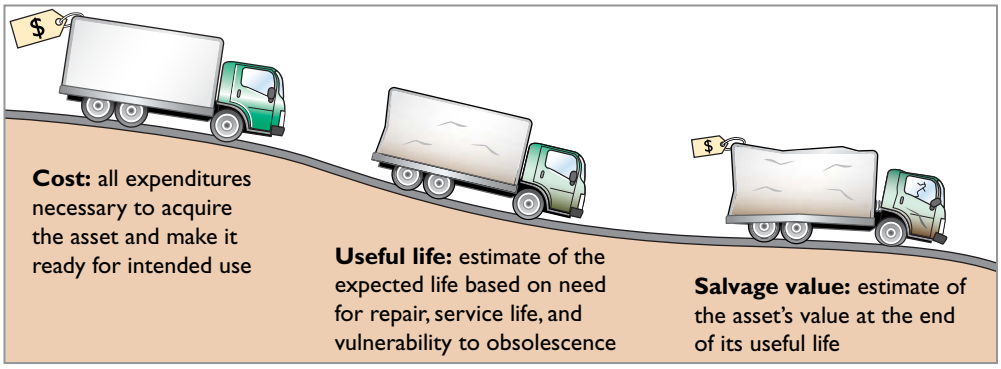
**ILLUSTRATION 10.6**
**Three factors in computing depreciation**


$
Cost: all expenditures necessary to acquire the asset and make it ready for intended use
Useful life: estimate of the expected life based on need for repair, service life, and vulnerability to obsolescence
$
Salvage value: estimate of the asset's value at the end of its useful life

1. **Cost.** Earlier, we explained the issues affecting the cost of a depreciable asset. Recall that companies record plant assets at cost, in accordance with the historical cost principle.
2. **Useful life.** Useful life is an estimate of the expected productive life, also called service life, of the asset for its owner. Useful life may be expressed in terms of time, units of activity (such as machine hours), or units of output. Useful life is an estimate. In making the estimate, management considers such factors as the intended use of the asset, its expected repair and maintenance, and its vulnerability to obsolescence. Past experience with similar assets is often helpful in deciding on expected useful life. We might reasonably expect Rent-A-Wreck and Avis to use different estimated useful lives for their vehicles.
3. **Salvage value.** Salvage value is an estimate of the asset's value at the end of its useful life (see Alternative Terminology). This value may be based on the asset's worth as scrap or on its expected trade-in value. Like useful life, salvage value is an estimate. In making the estimate, management considers how it plans to dispose of the asset and its experience with similar assets.

**ALTERNATIVE TERMINOLOGY**
Another term sometimes used for salvage value is *residual value*.

## Depreciation Methods

Depreciation is generally computed using one of the following methods:

1. Straight-line
2. Units-of-activity
3. Declining-balance

**HELPFUL HINT**
Depreciation expense is reported on the income statement. Accumulated depreciation is reported on the balance sheet as a deduction from plant assets.

Each method is acceptable under generally accepted accounting principles. Management selects the method(s) it believes to be appropriate. The objective is to select the method that best measures an asset's contribution to revenue over its useful life. Once a company chooses a method, it should apply it consistently over the useful life of the asset. Consistency enhances the comparability of financial statements. Depreciation affects the balance sheet through accumulated depreciation and the income statement through depreciation expense (see Helpful Hint).

We will compare the three depreciation methods using the data for a small delivery truck purchased by Barb's Florists on January 1, 2020 (see Illustration 10.7).

**ILLUSTRATION 10.7**
**Delivery truck data**

| | |
|---|---|
| Cost | $ 13,000 |
| Expected salvage value | $ 1,000 |
| Estimated useful life in years | 5 |
| Estimated useful life in miles | 100,000 |

Illustration 10.8 shows the use of the primary depreciation methods in a sample of the largest companies in the United States.

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## Straight-Line Method

Under the **straight-line method**, companies expense the same amount of depreciation for each year of the asset's useful life. It is measured solely by the passage of time.

To compute depreciation expense under the straight-line method, companies need to determine depreciable cost. **Depreciable cost** is the cost of the asset less its salvage value. It represents the total amount subject to depreciation. Under the straight-line method, to determine annual depreciation expense, we divide depreciable cost by the asset's useful life. **Illustration 10.9** shows the computation of the first year's depreciation expense for Barb's Florists.

**ILLUSTRATION 10.9** **Formula for straight-line method**

| Cost | – | Salvage Value | = | Depreciable Cost |
|---|---|---|---|---|
| $13,000 | – | $1,000 | = | $12,000 |

| Depreciable Cost | ÷ | Useful Life (in years) | = | Annual Depreciation Expense |
|---|---|---|---|---|
| $12,000 | ÷ | 5 | = | $2,400 |

Alternatively, we also can compute an annual **rate** of depreciation. In this case, the rate is 20% (100% ÷ 5 years). When a company uses an annual straight-line rate, it applies the percentage rate to the depreciable cost of the asset. **Illustration 10.10** shows a **depreciation schedule** using an annual rate.

**Barb's Florists**

| | Computation | | | Annual | End of Year | |
|---|---|---|---|---|---|---|
| Year | Depreciable Cost | × Depreciation Rate | = | Depreciation Expense | Accumulated Depreciation | Book Value |
| 2020 | $12,000 | 20% | | $2,400 | $ 2,400 | $10,600* |
| 2021 | 12,000 | 20 | | 2,400 | 4,800 | 8,200 |
| 2022 | 12,000 | 20 | | 2,400 | 7,200 | 5,800 |
| 2023 | 12,000 | 20 | | 2,400 | 9,600 | 3,400 |
| 2024 | 12,000 | 20 | | 2,400 | 12,000 | 1,000 |

*Book value = Cost − Accumulated depreciation = ($13,000 − $2,400).

Note that the depreciation expense of $2,400 is the same each year. The book value (computed as cost minus accumulated depreciation) at the end of the useful life is equal to the expected $1,000 salvage value.

What happens to these computations for an asset purchased **during** the year, rather than on January 1? In that case, it is necessary to **prorate the annual depreciation** on a time basis. If Barb's Florists had purchased the delivery truck on April 1, 2020, the company would own the truck for nine months of the first year (April–December). Thus, depreciation for 2020 would be $1,800 ($12,000 × 20% × 9/12 of a year).

The straight-line method predominates in practice. Such large companies as **Campbell Soup**, **Marriott**, and **General Mills** use the straight-line method. It is simple to apply, and it matches expenses with revenues when the use of the asset is reasonably uniform throughout the service life.

**ILLUSTRATION 10.8**
**Use of depreciation methods in large U.S. companies**

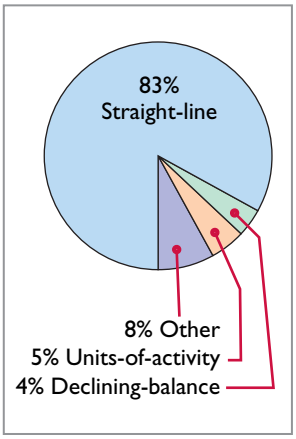
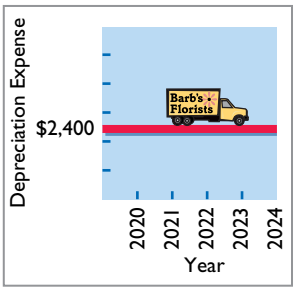



**ILLUSTRATION 10.10**
**Straight-line depreciation schedule**



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### DO IT! 2a | Straight-Line Depreciation

On January 1, 2020, Iron Mountain Ski Corporation purchased a new snow-grooming machine for $50,000. The machine is estimated to have a 10-year life with a $2,000 salvage value. What journal entry would Iron Mountain Ski Corporation make at December 31, 2020, if it uses the straight-line method of depreciation?

**ACTION PLAN**

- Calculate depreciable cost (Cost – Salvage value).
- Divide the depreciable cost by the asset's estimated useful life.

**Solution**

$$\text{Depreciation expense} = \frac{\text{Cost} - \text{Salvage value}}{\text{Useful life}} = \frac{\$50{,}000 - \$2{,}000}{10} = \$4{,}800$$

The entry to record the first year's depreciation would be:

| | | | |
|---|---|---|---|
| Dec. 31 | Depreciation Expense | 4,800 | |
| | Accumulated Depreciation—Equipment | | 4,800 |
| | (To record annual depreciation on snow-grooming machine) | | |

Related exercise material: **BE10.4, BE10.5, and DO IT! 10.2a.**

## Units-of-Activity Method

**ALTERNATIVE TERMINOLOGY**

Another term often used is the *units-of-production method.*

**HELPFUL HINT**

Under any method, depreciation stops when the asset's book value equals expected salvage value.

Under the **units-of-activity method**, useful life is expressed in terms of the total units of production or use expected from the asset, rather than as a time period (see **Alternative Terminology**). The units-of-activity method is ideally suited to factory machinery. Manufacturing companies can measure production in units of output or in machine hours. This method can also be used for such assets as delivery equipment (miles driven) and airplanes (hours in use). The units-of-activity method is generally not suitable for buildings or furniture because depreciation for these assets is more a function of time than of use.

To use this method, companies estimate the total units of activity for the entire useful life, and then divide these units into depreciable cost. The resulting number represents the depreciable cost per unit. The depreciable cost per unit is then applied to the units of activity during the year to determine the annual depreciation expense (see **Helpful Hint**).

To illustrate, assume that Barb's Florists drives its delivery truck 15,000 miles in the first year. **Illustration 10.11** shows the units-of-activity formula and the computation of the first year's depreciation expense.

**ILLUSTRATION 10.11**
**Formula for units-of-activity method**

| Depreciable Cost | ÷ | Total Units of Activity | = | Depreciable Cost per Unit |
|---|---|---|---|---|
| $12,000 | ÷ | 100,000 miles | = | $0.12 |

| Depreciable Cost per Unit | × | Units of Activity during the Year | = | Annual Depreciation Expense |
|---|---|---|---|---|
| $0.12 | × | 15,000 miles | = | $1,800 |

**Illustration 10.12** presents the units-of-activity depreciation schedule, using assumed mileage.

This method is easy to apply for assets purchased mid-year. In such a case, the company computes the depreciation using the productivity of the asset for the partial year.

The units-of-activity method is not nearly as popular as the straight-line method (see Illustration 10.8) primarily because it is often difficult for companies to reasonably estimate total activity. However, some very large companies, such as **Chevron** and **Boise Cascade** (a forestry company),

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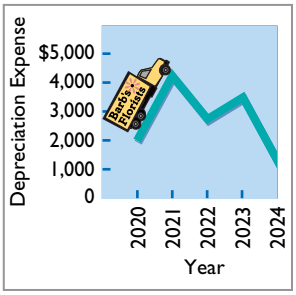
**Barb's Florists**

| Year | Computation: Units of Activity | × | Depreciable Cost/Unit | = | Annual Depreciation Expense | End of Year: Accumulated Depreciation | Book Value |
|---|---|---|---|---|---|---|---|
| 2020 | 15,000 | | $0.12 | | **$1,800** | $ 1,800 | $11,200* |
| 2021 | 30,000 | | 0.12 | | **3,600** | 5,400 | 7,600 |
| 2022 | 20,000 | | 0.12 | | **2,400** | 7,800 | 5,200 |
| 2023 | 25,000 | | 0.12 | | **3,000** | 10,800 | 2,200 |
| 2024 | 10,000 | | 0.12 | | **1,200** | 12,000 | **1,000** |

*($13,000 – $1,800).

**ILLUSTRATION 10.12**
**Units-of-activity depreciation schedule**




do use this method. When the productivity of an asset varies significantly from one period to another, the units-of-activity method results in the best matching of expenses with revenues.

## Declining-Balance Method

The **declining-balance method** produces a decreasing annual depreciation expense over the asset's useful life. The method is so named because the periodic depreciation is based on a **declining book value** (cost less accumulated depreciation) of the asset. With this method, companies compute annual depreciation expense by multiplying the book value at the beginning of the year by the declining-balance depreciation rate. **The depreciation rate remains constant from year to year, but the book value to which the rate is applied declines each year.**

At the beginning of the first year, book value is the cost of the asset. This is because the balance in accumulated depreciation at the beginning of the asset's useful life is zero. In subsequent years, book value is the difference between cost and accumulated depreciation to date. Unlike the other depreciation methods, the declining-balance method does not use depreciable cost in computing annual depreciation expense. That is, **it ignores salvage value in determining the amount to which the declining-balance rate is applied**. Salvage value, however, does limit the total depreciation that can be taken. Depreciation stops when the asset's book value equals expected salvage value.

A common declining-balance rate is double the straight-line rate. The method is often called the **double-declining-balance method**. If Barb's Florists uses the double-declining-balance method, it uses a depreciation rate of 40% (2 × the straight-line rate of 20%). **Illustration 10.13** shows the declining-balance formula and the computation of the first year's depreciation on the delivery truck.

| Book Value at Beginning of Year | × | Declining-Balance Rate | = | Annual Depreciation Expense |
|---|---|---|---|---|
| $13,000 | × | 40% | = | $5,200 |

**ILLUSTRATION 10.13**
**Formula for declining-balance method**

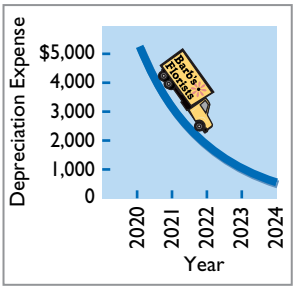
**Illustration 10.14** shows the depreciation schedule under this method.

**Barb's Florists**

| Year | Computation: Book Value Beginning of Year | × | Depreciation Rate | = | Annual Depreciation Expense | End of Year: Accumulated Depreciation | Book Value |
|---|---|---|---|---|---|---|---|
| 2020 | $13,000 | | 40% | | **$5,200** | $ 5,200 | $7,800 |
| 2021 | 7,800 | | 40 | | **3,120** | 8,320 | 4,680 |
| 2022 | 4,680 | | 40 | | **1,872** | 10,192 | 2,808 |
| 2023 | 2,808 | | 40 | | **1,123** | 11,315 | 1,685 |
| 2024 | 1,685 | | 40 | | **685*** | 12,000 | **1,000** |

*Computation of $674 ($1,685 × 40%) is adjusted to $685 in order for book value to equal salvage value.

**ILLUSTRATION 10.14**
**Double-declining-balance depreciation schedule**



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**HELPFUL HINT**

**The method recommended for an asset that is expected to be significantly more productive in the first half of its useful life is the declining-balance method.**

The delivery equipment is 69% depreciated ($8,320 ÷ $12,000) at the end of the second year. Under the straight-line method, the truck would be depreciated 40% ($4,800 ÷ $12,000) at that time. Because the declining-balance method produces higher depreciation expense in the early years than in the later years, it is considered an **accelerated-depreciation method**. The declining-balance method is compatible with the expense recognition principle. It matches the higher depreciation expense in early years with the higher benefits received in these years. It also recognizes lower depreciation expense in later years, when the asset's contribution to revenue is less. Some assets lose usefulness rapidly because of obsolescence. In these cases, the declining-balance method provides the most appropriate depreciation amount (see **Helpful Hint**).

When a company purchases an asset during the year, it must prorate the first year's declining-balance depreciation on a time basis. For example, if Barb's Florists had purchased the truck on April 1, 2020, depreciation for 2020 would become $3,900 ($13,000 × 40% × 9/12). The book value at the beginning of 2021 is then $9,100 ($13,000 − $3,900), and the 2021 depreciation is $3,640 ($9,100 × 40%). Subsequent computations would follow from those amounts.

## Comparison of Methods

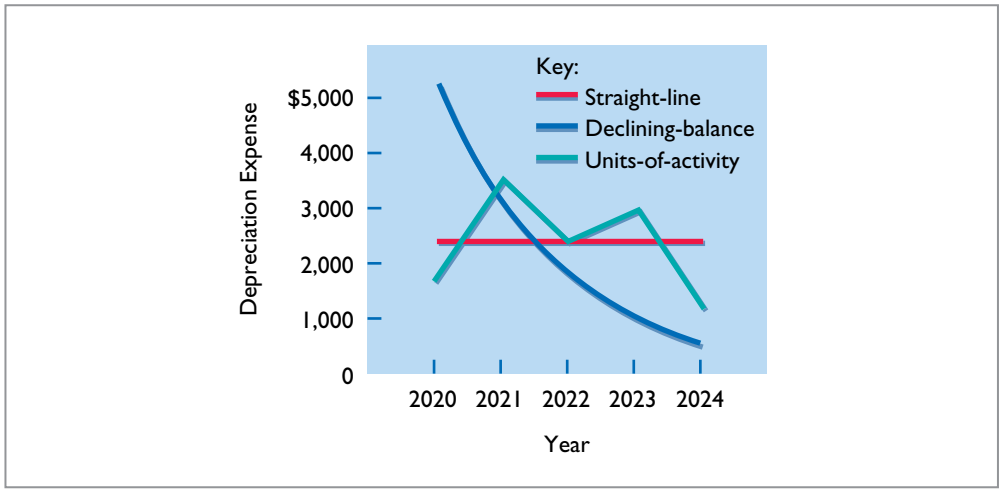
**Illustration 10.15** compares annual and total depreciation expense under each of the three methods for Barb's Florists.

**ILLUSTRATION 10.15**
**Comparison of depreciation methods**

| Year | Straight-Line | Units-of-Activity | Declining-Balance |
|---|---|---|---|
| 2020 | $ 2,400 | $ 1,800 | $ 5,200 |
| 2021 | 2,400 | 3,600 | 3,120 |
| 2022 | 2,400 | 2,400 | 1,872 |
| 2023 | 2,400 | 3,000 | 1,123 |
| 2024 | 2,400 | 1,200 | 685 |
| | $12,000 | $12,000 | $12,000 |

Annual depreciation varies considerably among the methods, but **total depreciation expense is the same ($12,000) for the five-year period** under all three methods. Each method is acceptable in accounting because each recognizes in a rational and systematic manner the decline in service potential of the asset. **Illustration 10.16** graphs the depreciation expense pattern under each method.

**ILLUSTRATION 10.16**
**Patterns of depreciation**



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## Depreciation and Income Taxes

The Internal Revenue Service (IRS) allows taxpayers to deduct depreciation expense when they compute taxable income. However, the IRS does not require taxpayers to use the same depreciation method on the tax return that is used in preparing financial statements.

Many corporations use straight-line in their financial statements to maximize net income. At the same time, they use a special accelerated-depreciation method on their tax returns to minimize their income taxes. Taxpayers must use on their tax returns either the straight-line method or a special accelerated-depreciation method called the **Modified Accelerated Cost Recovery System** (MACRS).

## Revising Periodic Depreciation

Depreciation is one example of the use of estimation in the accounting process. Management should periodically review annual depreciation expense. If wear and tear or obsolescence indicate that annual depreciation estimates are inadequate or excessive, the company should change the amount of depreciation expense.

When a change in an estimate is required, the company makes the change in **current and future years**. **It does not change depreciation in prior periods.** The rationale is that continual restatement of prior periods would adversely affect confidence in financial statements.

To determine the new annual depreciation expense, the company first computes the asset's depreciable cost at the time of the revision. It then allocates the revised depreciable cost to the remaining useful life (see **Helpful Hint**).

**HELPFUL HINT**

**Use a step-by-step approach: (1) determine new depreciable cost; (2) divide by remaining useful life.**

To illustrate, assume that Barb's Florists decides on January 1, 2023, to extend the useful life of the truck one year (a total life of six years) and increase its salvage value to $2,200. The company has used the straight-line method to depreciate the asset to date. Depreciation per year was $2,400 [($13,000 − $1,000) ÷ 5]. Accumulated depreciation after three years (2020–2022) is $7,200 ($2,400 × 3), and book value is $5,800 ($13,000 − $7,200). The new annual depreciation is $1,200, computed as shown in **Illustration 10.17**.

**ILLUSTRATION 10.17**
**Revised depreciation computation**

| | | |
|---|---|---|
| Book value, 1/1/23 | $ 5,800 | |
| Less: Salvage value | 2,200 | |
| Depreciable cost | $ 3,600 | |
| Remaining useful life | 3 years | (2023–2025) |
| **Revised annual depreciation ($3,600 ÷ 3)** | **$ 1,200** | |

Barb's Florists makes no entry for the change in estimate. On December 31, 2023, during the preparation of adjusting entries, it records depreciation expense of $1,200. Companies must describe in the financial statements significant changes in estimates.

## Impairments

As noted earlier, the book value of plant assets is rarely the same as the fair value. In instances where the value of a plant asset declines substantially, its fair value might fall materially below book value. This may happen because a machine has become obsolete, or the market for the product made by the machine has dried up or has become very competitive. A **permanent decline** in the fair value of an asset is referred to as an **impairment**. So as not to overstate the asset on the books, the company records a write-down, whereby the asset's cost is reduced to its new fair value during the year in which the decline in value occurs. Recently, **Disney** recorded a $200 million write-down on its action movie *John Carter*. Disney spent more than $300 million producing the film.

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### DO IT! 2b | Revised Depreciation

Chambers Corporation purchased a piece of equipment for $36,000. It estimated a 6-year life and $6,000 salvage value. Thus, straight-line depreciation was $5,000 per year [($36,000 − $6,000) ÷ 6]. At the end of year three (before the depreciation adjustment), it estimated the new total life to be 10 years and the new salvage value to be $2,000. Compute the revised depreciation.

**ACTION PLAN**

- Calculate depreciable cost.
- Divide depreciable cost by new remaining life.

**Solution**

Original depreciation expense = [($36,000 − $6,000) ÷ 6] = $5,000
Accumulated depreciation after 2 years = 2 × $5,000 = $10,000
Book value = $36,000 − $10,000 = $26,000

| | |
|---|---|
| Book value after 2 years of depreciation | $26,000 |
| Less: New salvage value | 2,000 |
| Depreciable cost | $24,000 |
| Remaining useful life | 8 years |
| Revised annual depreciation ($24,000 ÷ 8) | $ 3,000 |

Related exercise material: **BE10.8, DO IT! 10.2b, and E10.8.**

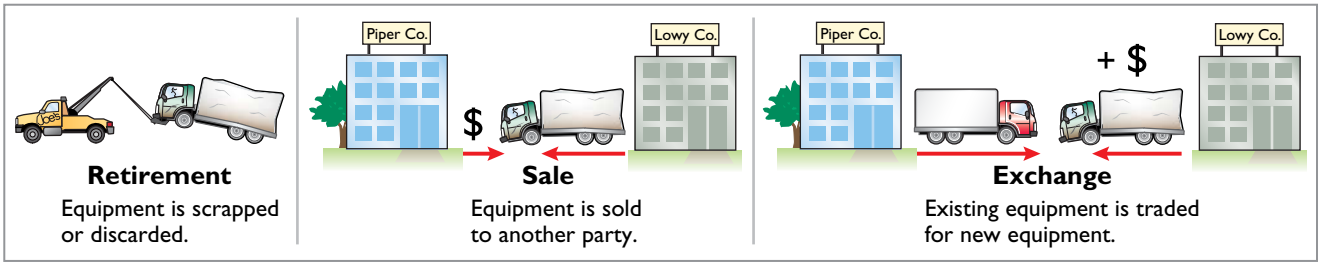
# Plant Asset Disposals

**LEARNING OBJECTIVE 3**

Explain how to account for the disposal of plant assets.

Companies dispose of plant assets that are no longer useful to them. Illustration 10.18 shows the three ways in which companies make plant asset disposals.

**ILLUSTRATION 10.18** Methods of plant asset disposal




**HELPFUL HINT**

When disposing of a plant asset, a company removes from the accounts all amounts related to the asset. This includes the original cost and the total depreciation to date in the accumulated depreciation account.

Whatever the disposal method, the company must determine the book value of the plant asset at the disposal date to determine the gain or loss. Recall that the book value is the difference between the cost of the plant asset and the accumulated depreciation to date. If the disposal does not occur on the first day of the year, the company must record depreciation for the fraction of the year to the date of disposal. The company then eliminates the book value by reducing (debiting) Accumulated Depreciation for the total depreciation associated with that asset to the date of disposal and reducing (crediting) the asset account for the cost of the asset (see Helpful Hint).

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In this chapter, we examine the accounting for the retirement and sale of plant assets. In the appendix to the chapter, we discuss and illustrate the accounting for exchanges of plant assets.

# Retirement of Plant Assets

To illustrate the retirement of plant assets, assume that Hobart Company retires its computer printers, which cost $32,000. The accumulated depreciation on these printers is $32,000. The equipment, therefore, is fully depreciated (zero book value). The entry to record this retirement is as follows.

| | | | |
|---|---|---|---|
| Accumulated Depreciation—Equipment | | 32,000 | |
| Equipment | | | 32,000 |
| (To record retirement of fully depreciated equipment) | | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +32,000 | | | | |
| −32,000 | | | | |

**Cash Flows**
no effect

What happens if a fully depreciated plant asset is still useful to the company? In this case, the asset and its accumulated depreciation continue to be reported on the balance sheet, without further depreciation adjustment, until the company retires the asset. Reporting the asset and related accumulated depreciation on the balance sheet informs the financial statement reader that the asset is still in use. Once fully depreciated, no additional depreciation should be taken, even if an asset is still being used. In no situation can the accumulated depreciation on a plant asset exceed its cost.

If a company retires a plant asset before it is fully depreciated and no cash is received for scrap or salvage value, a loss on disposal occurs. For example, assume that Sunset Company discards delivery equipment that cost $18,000 and has accumulated depreciation of $14,000. The entry is as follows.

| | | | |
|---|---|---|---|
| Accumulated Depreciation—Equipment | | 14,000 | |
| Loss on Disposal of Plant Assets | | 4,000 | |
| Equipment | | | 18,000 |
| (To record retirement of delivery equipment at a loss) | | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +14,000 | | | | |
| | | | | −4,000 Exp |
| −18,000 | | | | |

**Cash Flows**
no effect

Companies report a loss on disposal of plant assets in the "Other expenses and losses" section of the income statement.

# Sale of Plant Assets

In a disposal by sale, the company compares the book value of the asset with the proceeds received from the sale. If the proceeds of the sale **exceed** the book value of the plant asset, **a gain on disposal occurs**. If the proceeds of the sale **are less than** the book value of the plant asset sold, **a loss on disposal occurs**.

Only by coincidence will the book value and the fair value of the asset be the same when the asset is sold. Gains and losses on sales of plant assets are therefore quite common. For example, **Delta Airlines** reported a $94 million gain on the sale of five **Boeing** B727-200 aircraft and five **Lockheed** L-1011-1 aircraft.

## Gain on Sale

To illustrate a gain on sale of plant assets, assume that on July 1, 2020, Wright Company sells office furniture for $16,000 cash. The office furniture originally cost $60,000. As of January 1, 2020, it had accumulated depreciation of $41,000. Depreciation for the first six months of 2020 is $8,000. Wright records depreciation expense and updates accumulated depreciation to July 1 with the following entry.

| | | | | |
|---|---|---|---|---|
| July 1 | Depreciation Expense | | 8,000 | |
| | Accumulated Depreciation—Equipment | | | 8,000 |
| | (To record depreciation expense for the first 6 months of 2020) | | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | –8,000 Exp |
| –8,000 | | | | |

**Cash Flows**
no effect

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After the accumulated depreciation balance is updated, the company computes the gain or loss. The gain or loss is the difference between the proceeds from the sale and the book value at the date of disposal. **Illustration 10.19** shows this computation for Wright Company, which has a gain on disposal of $5,000.

**ILLUSTRATION 10.19**
**Computation of gain on disposal**

| | |
|---|---|
| Cost of office furniture | $60,000 |
| Less: Accumulated depreciation ($41,000 + $8,000) | 49,000 |
| Book value at date of disposal | 11,000 |
| Proceeds from sale | 16,000 |
| **Gain on disposal of plant asset** | **$ 5,000** |

Wright records the sale and the gain on disposal of the plant asset as follows.

| A | = | L | + | OE |
|---|---|---|---|---|
| +16,000 | | | | |
| +49,000 | | | | |
| −60,000 | | | | |
| | | | | +5,000 Rev |

**Cash Flows** +16,000

| | | | |
|---|---|---|---|
| July 1 | Cash | 16,000 | |
| | Accumulated Depreciation—Equipment | 49,000 | |
| | Equipment | | 60,000 |
| | Gain on Disposal of Plant Assets | | 5,000 |
| | (To record sale of office furniture at a gain) | | |

Companies report a gain on disposal of plant assets in the "Other revenues and gains" section of the income statement.

## Loss on Sale

Assume that instead of selling the office furniture for $16,000, Wright sells it for $9,000. In this case, Wright computes a loss of $2,000 as shown in **Illustration 10.20**.

**ILLUSTRATION 10.20**
**Computation of loss on disposal**

| | |
|---|---|
| Cost of office furniture | $60,000 |
| Less: Accumulated depreciation | 49,000 |
| Book value at date of disposal | 11,000 |
| Proceeds from sale | 9,000 |
| **Loss on disposal of plant asset** | **$ 2,000** |

Wright records the sale and the loss on disposal of the plant asset as follows.

| A | = | L | + | OE |
|---|---|---|---|---|
| + 9,000 | | | | |
| +49,000 | | | | |
| | | | | −2,000 Exp |
| −60,000 | | | | |

**Cash Flows** +9,000

| | | | |
|---|---|---|---|
| July 1 | Cash | 9,000 | |
| | Accumulated Depreciation—Equipment | 49,000 | |
| | Loss on Disposal of Plant Assets | 2,000 | |
| | Equipment | | 60,000 |
| | (To record sale of office furniture at a loss) | | |

Companies report a loss on disposal of plant assets in the "Other expenses and losses" section of the income statement.

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### DO IT! 3 | Plant Asset Disposal

Overland Trucking has decided to sell an old truck that cost $30,000 and which has accumulated depreciation of $16,000. (a) What entry would Overland Trucking make to record the sale of the truck for $17,000 cash? (b) What entry would Overland Trucking make to record the sale of the truck for $10,000 cash?

**ACTION PLAN**

- At the time of disposal, determine the book value of the asset.
- Compare the asset's book value with the proceeds received to determine whether a gain or loss has occurred.

**Solution**

**a.** Sale of truck for cash at a gain:

| | | |
|---|---|---|
| Cash | 17,000 | |
| Accumulated Depreciation—Equipment | 16,000 | |
| Equipment | | 30,000 |
| Gain on Disposal of Plant Assets | | |
| [$17,000 – ($30,000 – $16,000)] | | 3,000 |
| (To record sale of truck at a gain) | | |

**b.** Sale of truck for cash at a loss:

| | | |
|---|---|---|
| Cash | 10,000 | |
| Accumulated Depreciation—Equipment | 16,000 | |
| Loss on Disposal of Plant Assets | | |
| [$10,000 – ($30,000 – $16,000)] | 4,000 | |
| Equipment | | 30,000 |
| (To record sale of truck at a loss) | | |

Related exercise material: **BE10.9, BE10.10, DO IT! 10.3, E10.9, and E10.10.**

# Natural Resources and Intangible Assets

**LEARNING OBJECTIVE 4**

Describe how to account for natural resources and intangible assets.

## Natural Resources

**Natural resources** consist of standing timber and underground deposits of oil, gas, and minerals (see **Helpful Hint**). These long-lived productive assets have two distinguishing characteristics: (1) they are physically extracted in operations (such as mining, cutting, or pumping), and (2) they are replaceable only by an act of nature.

The acquisition cost of a natural resource is the price needed to acquire the resource **and** prepare it for its intended use. For an already-discovered resource, such as an existing coal mine, cost is the price paid for the property.

**HELPFUL HINT**

On a balance sheet, natural resources may be described more specifically as *timberlands*, *mineral deposits*, *oil reserves*, and so on.

## Depletion

The allocation of the cost of natural resources in a rational and systematic manner over the resource's useful life is called **depletion**. (That is, depletion is to natural resources as depreciation is to plant assets.) **Companies generally use the units-of-activity method** (learned earlier in the chapter) **to compute depletion**. The reason is that **depletion generally is a function of the units extracted during the year**.

Under the units-of-activity method, companies divide the total cost of the natural resource minus salvage value by the number of units estimated to be in the resource. The result is a

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**depletion cost per unit**. To compute depletion, the cost per unit is then multiplied by the number of units extracted.

To illustrate, assume that Lane Coal Company invests $5 million in a mine estimated to have 1 million tons of coal and no salvage value. **Illustration 10.21** shows the computation of the depletion cost per unit.

**ILLUSTRATION 10.21**
**Computation of depletion cost per unit**

| Total Cost − Salvage Value / Total Estimated Units Available | = | Depletion Cost per Unit |
|---|---|---|
| $5,000,000 / 1,000,000 | = | $5.00 per ton |

If Lane extracts 250,000 tons in the first year, then the depletion for the year is $1,250,000 (250,000 tons × $5). It records the depletion as follows.

| | | |
|---|---|---|
| Inventory (coal) | 1,250,000 | |
| Accumulated Depletion | | 1,250,000 |
| (To record depletion of coal mine) | | |

A = L + OE
+1,250,000
−1,250,000

**Cash Flows**
no effect

Lane debits Inventory for the total depletion for the year and credits Accumulated Depletion to reduce the carrying value of the natural resource. Accumulated Depletion is a contra asset similar to Accumulated Depreciation. Lane credits Inventory when it sells the inventory and debits Cost of Goods Sold. The amount not sold remains in inventory and is reported in the current assets section of the balance sheet (see **Ethics Note**).

Some companies do not use an Accumulated Depletion account. In such cases, the company credits the amount of depletion directly to the natural resources account.

**ETHICS NOTE**

**Investors were stunned at news that Royal Dutch/Shell Group had significantly overstated its reported oil reserves—and perhaps had done so intentionally.**

## Intangible Assets

**Intangible assets** are rights, privileges, and competitive advantages that result from the ownership of long-lived assets that do not possess physical substance. Evidence of intangibles may exist in the form of contracts or licenses. Intangibles may arise from the following sources:

1. Government grants, such as patents, copyrights, licenses, trademarks, and trade names.
2. Acquisition of another business, in which the purchase price includes a payment for **goodwill**.
3. Private monopolistic arrangements arising from contractual agreements, such as franchises and leases.

Some widely known intangibles are **Microsoft**'s patents, **McDonald's** franchises, **Apple**'s trade name iPod, J.K. Rowling's copyrights on the *Harry Potter* books, and the trademark **Rent-A-Wreck** in the Feature Story.

## Accounting for Intangible Assets

**HELPFUL HINT**

***Amortization* is to intangibles what *depreciation* is to plant assets and *depletion* is to natural resources.**

Companies record intangible assets at cost. Intangibles are categorized as having either a limited life or an indefinite life. If an intangible has a **limited life**, the company allocates its cost over the asset's useful life using a process similar to depreciation. The process of allocating the cost of intangibles is referred to as **amortization** (see **Helpful Hint**). The cost of intangible assets with **indefinite lives should not be amortized**.

To record amortization of an intangible asset, a company increases (debits) Amortization Expense, and decreases (credits) the specific intangible asset. Alternatively, some companies choose to credit a contra account, such as Accumulated Amortization. *For homework purposes, you should directly credit the specific intangible asset.*

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Intangible assets are typically amortized on a straight-line basis. For example, the legal life of a patent is 20 years. Companies **amortize the cost of a patent over its 20-year life or its useful life, whichever is shorter**. To illustrate the computation of patent amortization, assume that National Labs purchases a patent at a cost of $60,000. If National estimates the useful life of the patent to be eight years, the annual amortization expense is $7,500 ($60,000 ÷ 8). National records the annual amortization as follows.

| | | | |
|---|---|---|---|
| Dec. 31 | Amortization Expense | 7,500 | |
| | Patents | | 7,500 |
| | (To record patent amortization) | | |

A = L + OE
−7,500 Exp
−7,500

**Cash Flows**
no effect

Companies classify Amortization Expense as an operating expense in the income statement.

There is a difference between intangible assets and plant assets in determining cost. For plant assets, cost includes both the purchase price of the asset and the costs incurred in designing and constructing the asset. In contrast, the initial cost for an intangible asset includes **only the purchase price**. Companies expense any costs incurred in developing an intangible asset.

## Patents

A **patent** is an exclusive right issued by the U.S. Patent Office that enables the recipient to manufacture, sell, or otherwise control an invention for a period of 20 years from the date of the grant. A patent is nonrenewable. But, companies can extend the legal life of a patent by obtaining new patents for improvements or other changes in the basic design. **The initial cost of a patent is the cash or cash equivalent price paid to acquire the patent.**

The saying, "A patent is only as good as the money you're prepared to spend defending it," is very true. Many patents are subject to litigation by competitors. Any legal costs an owner incurs in successfully defending a patent in an infringement suit are considered necessary to establish the patent's validity. **The owner adds those costs to the Patents account and amortizes them over the remaining life of the patent.**

**The patent holder amortizes the cost of a patent over its 20-year legal life or its useful life, whichever is shorter.** Companies consider obsolescence and inadequacy in determining useful life. These factors may cause a patent to become economically ineffective before the end of its legal life.

## Copyrights

The federal government grants **copyrights**, which give the owner the exclusive right to reproduce and sell an artistic or published work. Copyrights extend for the life of the creator plus 70 years. The cost of a copyright is the **cost of acquiring and defending it**. The cost may be only the small fee paid to the U.S. Copyright Office. Or, it may amount to much more if a copyright is acquired from another party.

The useful life of a copyright generally is significantly shorter than its legal life. Therefore, copyrights usually are amortized over a relatively short period of time.

## Trademarks and Trade Names

A **trademark** or **trade name** is a word, phrase, jingle, or symbol that identifies a particular enterprise or product. Trade names like Wheaties, Monopoly, Big Mac, Kleenex, Coca-Cola, and Jeep create immediate product identification. They also generally enhance the sale of the product. The creator or original user may obtain exclusive legal right to the trademark or trade name by registering it with the U.S. Patent Office. Such registration provides 20 years of protection. The registration may be renewed indefinitely as long as the trademark or trade name is in use.

If a company purchases the trademark or trade name, its cost is the purchase price. If a company develops and maintains the trademark or trade name, any costs related to these activities are expensed as incurred. Because trademarks and trade names have indefinite lives, they are not amortized.

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## Accounting Across the Organization Google

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### We Want to Own Glass

**Google**, which has trademarked the term "Google Glass," now wants to trademark the term "Glass." Why? Because the simple word Glass has marketing advantages over the term Google Glass. It is easy to remember and is more universal. Regulators, however, are balking at Google's request. They say that the possible trademark is too similar to other existing or pending software trademarks that contain the word "glass." Also, regulators suggest that the term Glass is merely descriptive and therefore lacks trademark protection. For example, regulators note that a company that makes salsa could not trademark the term "Spicy Salsa."

**BorderStylo LLC**, which developed a Web-browser extension called Write on Glass, has filed a notice of opposition to Google's request. Google is fighting back and has sent the trademark examiner a 1,928-page application defense.

**Source:** Jacob Gershman, "Google Wants to Own 'Glass'," *Wall Street Journal* (April 4, 2014), p. B5.

**If Google is successful in registering the term Glass, where will this trademark be reported on its financial statements? (Go to WileyPLUS for this answer and additional questions.)**

## Franchises

When you fill up your tank at the corner **Shell** station, eat lunch at **Subway**, or rent a car from **Rent-A-Wreck**, you are dealing with franchises. A **franchise** is a contractual arrangement between a franchisor and a franchisee. The franchisor grants the franchisee the right to sell certain products, perform specific services, or use certain trademarks or trade names, usually within a designated geographic area.

Another type of franchise is a **license**. A license granted by a governmental body permits a company to use public property in performing its services. Examples are the use of city streets for a bus line or taxi service, the use of public land for telephone and electric lines, and the use of airwaves for radio or TV broadcasting. In a recent license agreement, **FOX**, **CBS**, and **NBC** agreed to pay $27.9 billion for the right to broadcast **NFL** football games over an eight-year period. Franchises and licenses may be granted for a definite period of time, an indefinite period, or perpetually.

**When a company can identify costs with the purchase of a franchise or license, it should recognize an intangible asset.** Companies should amortize the cost of a limited-life franchise (or license) over its useful life. If the life is indefinite, the cost is not amortized. Annual payments made under a franchise agreement are recorded as **operating expenses** in the period in which they are incurred.

## Goodwill

Usually, the largest intangible asset that appears on a company's balance sheet is goodwill. **Goodwill** represents the value of all favorable attributes that relate to a company that are not attributable to any other specific asset. These include exceptional management, desirable location, good customer relations, skilled employees, high-quality products, and harmonious relations with labor unions. Goodwill is unique. Unlike assets such as investments and plant assets, which can be sold **individually** in the marketplace, goodwill can be identified only with the business **as a whole**.

If goodwill can be identified only with the business as a whole, how can its amount be determined? One could try to put a dollar value on the factors listed above (exceptional management, desirable location, and so on). But, the results would be very subjective, and such subjective valuations would not contribute to the reliability of financial statements. **Therefore, companies record goodwill only when an entire business is purchased. In that case, goodwill is the excess of cost over the fair value of the net assets (assets less liabilities) acquired.**

In recording the purchase of a business, the company debits (increases) the identifiable acquired assets, credits liabilities at their fair values, credits cash for the purchase price, and records the difference as goodwill. **Goodwill is not amortized** because it is considered to have an indefinite life. However, goodwill must be written down if a company determines that its value has been permanently impaired. Companies report goodwill in the balance sheet under intangible assets.

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## Research and Development Costs

**Research and development costs** are expenditures that may lead to patents, copyrights, new processes, and new products (see **Helpful Hint**). Many companies spend considerable sums of money on research and development (R&D). For example, in a recent year, **Google** spent over $9.8 billion on R&D.

Research and development costs present accounting problems. For one thing, it is sometimes difficult to assign the costs to specific projects. Also, there are uncertainties in identifying the extent and timing of future benefits. As a result, companies usually record R&D costs **as an expense when incurred**, whether the research and development is successful or not.

To illustrate, assume that Laser Scanner Company spent $3 million on R&D that resulted in two highly successful patents. It spent $20,000 on legal fees for the patents. The company would add the lawyers' fees to the Patents account. The R&D costs, however, cannot be included in the cost of the patents. Instead, the company would record the R&D costs as an expense when incurred.

Many disagree with this accounting approach. They argue that expensing R&D costs leads to understated assets and net income. Others, however, argue that capitalizing these costs will lead to highly speculative assets on the balance sheet. Who is right is difficult to determine.

**HELPFUL HINT**

**Research and development (R&D) costs are not intangible assets. But because they may lead to patents and copyrights, we discuss them in this section.**

### DO IT! 4 | Classification Concepts

Match the statement with the term most directly associated with it.

| | |
|---|---|
| Copyrights | Depletion |
| Intangible assets | Franchises |
| Research and development costs | |

1. _____ The allocation of the cost of a natural resource to expense in a rational and systematic manner.
2. _____ Rights, privileges, and competitive advantages that result from the ownership of long-lived assets that do not possess physical substance.
3. _____ An exclusive right granted by the federal government to reproduce and sell an artistic or published work.
4. _____ A right to sell certain products or services or to use certain trademarks or trade names within a designated geographic area.
5. _____ Costs incurred by a company that often lead to patents or new products. These costs must be expensed as incurred.

**ACTION PLAN**

- **Know that the accounting for intangibles often depends on whether the item has a finite or indefinite life.**
- **Recognize the many similarities and differences between the accounting for natural resources, plant assets, and intangible assets.**

**Solution**

1. Depletion
2. Intangible assets
3. Copyrights
4. Franchises
5. Research and development costs

Related exercise material: **BE10.11, BE10.12, DO IT! 10.4, E10.11, E10.12, and E10.13.**

# Statement Presentation and Analysis

**LEARNING OBJECTIVE 5**

Discuss how plant assets, natural resources, and intangible assets are reported and analyzed.

## Presentation

Usually, companies combine plant assets and natural resources under "Property, plant, and equipment" in the balance sheet. They show intangible assets separately. **Illustration 10.22**

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shows the assets section from the balance sheet of Artex Company, with emphasis on the reporting of plant assets.

**ILLUSTRATION 10.22**
**Presentation of property, plant, and equipment, and intangible assets**

**Artex Company**
**Balance Sheet (partial)**
**(in thousands)**

| | | | |
|---|---|---|---|
| **Current assets** | | | |
| Cash | | $ 430 | |
| Accounts receivable | | 100 | |
| Inventory | | 910 | |
| Total current assets | | | $ 1,440 |
| **Property, plant, and equipment** | | | |
| Gold mine | $ 530 | | |
| Less: Accumulated depletion | 210 | 320 | |
| Land | | 600 | |
| Buildings | 7,600 | | |
| Less: Accumulated depreciation—buildings | 500 | 7,100 | |
| Equipment | 3,870 | | |
| Less: Accumulated depreciation—equipment | 620 | 3,250 | |
| Total property, plant, and equipment | | | 11,270 |
| **Intangible assets** | | | |
| Patents | | 440 | |
| Trademarks | | 180 | |
| Goodwill | | 900 | 1,520 |
| Total assets | | | $14,230 |

Companies may disclose in the balance sheet or the notes to the financial statements the major classes of assets such as land, land improvements, buildings and equipment, and accumulated depreciation (by major classes or in total). In addition, they should describe the depreciation and amortization methods that were used, as well as disclose the amount of depreciation and amortization expense for the period. *For homework purposes, use the format in Illustration 10.22 for preparing balance sheet information.*

## Analysis

Using ratios, we can analyze how efficiently a company uses its assets to generate sales. The **asset turnover** analyzes the productivity of a company's assets. It tells us how many dollars of sales a company generates for each dollar invested in assets. This ratio is computed by dividing net sales by average total assets for the period. **Illustration 10.23** shows the computation of the asset turnover for **The Procter & Gamble Company**. P&G's net sales for 2015 were $76,279 million. Its total ending assets were $129,495 million, and beginning assets were $144,266 million.

**ILLUSTRATION 10.23**
**Asset turnover formula and computation**

| Net Sales | ÷ | Average Total Assets | = | Asset Turnover |
|---|---|---|---|---|
| $76,279 | ÷ | $\frac{\$144,266 + \$129,495}{2}$ | = | .56 times |

Thus, each dollar invested in assets produced $0.56 in sales for P&G. If a company is using its assets efficiently, each dollar of assets will create a high amount of sales. This ratio varies greatly among different industries—from those that are asset-intensive (utilities) to those that are not (services).

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## People, Planet, and Profit Insight BHP Billiton

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### Sustainability Report Please

Sustainability reports identify how the company is meeting its corporate social responsibilities. Many companies, both large and small, are now issuing these reports. For example, companies such as **Disney**, **Best Buy**, **Microsoft**, **Ford**, and **ConocoPhilips** issue these reports. Presented below is an adapted section of a recent **BHP Billiton** (a global mining, oil, and gas company) sustainability report on its environmental policies. These policies are to (1) take action to address the challenges of climate change, (2) set and achieve targets that reduce pollution, and (3) enhance biodiversity by assessing and considering ecological values and land-use aspects. Here is how BHP Billiton measures the success or failure of some of these policies:

| Environment | Commentary | Target Date |
|---|---|---|
| We will maintain total greenhouse gas emissions below FY2006 levels. | FY2013 greenhouse gas emissions were lower than the FY2006 baseline. | 30 June 2017 |
| All operations to offset impacts to biodiversity and the related benefits derived from ecosystems. | Land and Biodiversity Management Plans were developed at all our operations. | Annual |
| We will finance the conservation and continuing management of areas of high biodiversity and ecosystem value. | Two projects of international conservation significance were established—the Five Rivers Conservation Project, in Australia, and the Valdivian Coastal Reserve Conservation Project, in Chile. | 30 June 2017 |

In addition to the environment, BHP Billiton has sections in its sustainability report which discuss people, safety, health, and community.

**Why do you believe companies issue sustainability reports? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 5 | Asset Turnover

Paramour Company reported net income of $180,000, net sales of $420,000, and had total assets of $460,000 on January 1, 2020, and total assets on December 31, 2020, of $540,000 billion. Determine Paramour's asset turnover for 2020.

**ACTION PLAN**

- **Recognize that the asset turnover analyzes the productivity of a company's assets.**
- **Know the formula: Net sales ÷ Average total assets = Asset turnover.**

### Solution

The asset turnover for Paramour Company is computed as follows.

**Net Sales ÷ Average Total Assets = Asset Turnover**

$$\$420{,}000 \div \frac{\$460{,}000 + \$540{,}000}{2} = .84 \text{ times}$$

Related Exercise material: **BE10.14, DO IT! 10.5, and E10.14.**

# Appendix 10A Exchange of Plant Assets

**LEARNING OBJECTIVE *6**

Explain how to account for the exchange of plant assets.

Ordinarily, companies record a gain or loss on the exchange of plant assets. The rationale for recognizing a gain or loss is that most exchanges have **commercial substance**. An exchange has commercial substance if the future cash flows change as a result of the exchange.

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To illustrate, Ramos Co. exchanges some of its equipment for land held by Brodhead Inc. It is likely that the timing and amount of the cash flows arising from the land will differ significantly from the cash flows arising from the equipment. As a result, both Ramos and Brodhead are in different economic positions. Therefore, **the exchange has commercial substance**, and the companies recognize a gain or loss in the exchange. Because most exchanges have commercial substance (even when similar assets are exchanged), we illustrate only this type of situation for both a loss and a gain.

## Loss Treatment

To illustrate an exchange that results in a loss, assume that Roland Company exchanged a set of used trucks plus cash for a new semi-truck. The used trucks have a combined book value of $42,000 (cost $64,000 less $22,000 accumulated depreciation). Roland's purchasing agent, experienced in the secondhand market, indicates that the used trucks have a fair value of $26,000. In addition to the trucks, Roland must pay $17,000 for the semi-truck. Roland computes the cost of the semi-truck as shown in **Illustration 10A.1**.

**ILLUSTRATION 10A.1**
**Cost of semi-truck**

| | |
|---|---|
| Fair value of used trucks | $26,000 |
| Cash paid | 17,000 |
| Cost of semi-truck | $43,000 |

Roland incurs a loss on disposal of plant assets of $16,000 on this exchange. The reason is that the book value of the used trucks is greater than the fair value of these trucks. **Illustration 10A.2** shows the computation.

**ILLUSTRATION 10A.2**
**Computation of loss on disposal**

| | |
|---|---|
| Book value of used trucks ($64,000 – $22,000) | $42,000 |
| Fair value of used trucks | 26,000 |
| **Loss on disposal of plant assets** | **$16,000** |

In recording an exchange at a loss, four steps are required: (1) eliminate the book value of the asset given up, (2) record the cost of the asset acquired, (3) recognize the loss on disposal of plant assets, and (4) record cash paid or received. Roland Company thus records the exchange on the loss as follows.

| A | = | L | + | OE |
|---|---|---|---|---|
| +43,000 | | | | |
| +22,000 | | | | |
| | | | | –16,000 Exp |
| –64,000 | | | | |
| –17,000 | | | | |

**Cash Flows**
–17,000

| | | |
|---|---|---|
| Equipment (new) | 43,000 | |
| Accumulated Depreciation—Equipment | 22,000 | |
| Loss on Disposal of Plant Assets | 16,000 | |
| Equipment (old) | | 64,000 |
| Cash | | 17,000 |
| (To record exchange of used trucks for semi-truck) | | |

## Gain Treatment

To illustrate a gain situation, assume that Mark Express Delivery decides to exchange its old delivery equipment plus cash of $3,000 for new delivery equipment. The book value of the old delivery equipment is $12,000 (cost $40,000 less accumulated depreciation $28,000). The fair value of the old delivery equipment is $19,000.

The cost of the new asset is the fair value of the old asset exchanged plus any cash paid (or other consideration given up). The cost of the new delivery equipment is $22,000, computed as shown in **Illustration 10A.3**.

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| | |
|---|---|
| Fair value of old delivery equipment | $19,000 |
| Cash paid | 3,000 |
| **Cost of new delivery equipment** | **$22,000** |

**ILLUSTRATION 10A.3**
**Cost of new delivery equipment**

A gain results when the fair value of the old delivery equipment is greater than its book value. For Mark Express, there is a gain of $7,000 on disposal of plant assets, computed as shown in **Illustration 10A.4**.

| | |
|---|---|
| Fair value of old delivery equipment | $19,000 |
| Book value of old delivery equipment ($40,000 – $28,000) | 12,000 |
| **Gain on disposal of plant assets** | **$ 7,000** |

**ILLUSTRATION 10A.4**
**Computation of gain on disposal**

Mark Express Delivery records the exchange as follows.

| | | |
|---|---|---|
| Equipment (new) | 22,000 | |
| Accumulated Depreciation—Equipment (old) | 28,000 | |
| Equipment (old) | | 40,000 |
| Gain on Disposal of Plant Assets | | 7,000 |
| Cash | | 3,000 |
| (To record exchange of old delivery equipment for new delivery equipment) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +22,000 | | | | |
| +28,000 | | | | |
| −40,000 | | | | |
| | | | | +7,000 Rev |
| – 3,000 | | | | |

**Cash Flows**
– 3,000

In recording an exchange at a gain, the following four steps are involved: (1) eliminate the book value of the asset given up, (2) record the cost of the asset acquired, (3) recognize the gain on disposal of plant assets, and (4) record cash paid or received. Accounting for exchanges of plant assets becomes more complex if the transaction does not have commercial substance. This issue is discussed in more advanced accounting classes.

# Review and Practice

## Learning Objectives Review

### 1 Explain the accounting for plant asset expenditures.

The cost of plant assets includes all expenditures necessary to acquire the asset and make it ready for its intended use. Once cost is established, the company uses that amount as the basis of accounting for the plant assets over its useful life.

Companies incur revenue expenditures to maintain the operating efficiency and productive life of an asset. They debit these expenditures to Maintenance and Repairs Expense as incurred. Capital expenditures increase the operating efficiency, productive capacity, or expected useful life of the asset. Companies generally debit these expenditures to the plant asset affected.

### 2 Apply depreciation methods to plant assets.

Depreciation is the allocation of the cost of a plant asset to expense over its useful (service) life in a rational and systematic manner. Depreciation is not a process of valuation, nor is it a process that results in an accumulation of cash.

Three depreciation methods are:

| Method | Effect on Annual Depreciation | Formula |
|---|---|---|
| Straight-line | Constant amount | Depreciable cost ÷ Useful life (in years) |
| Units-of-activity | Varying amount | Depreciable cost per unit × Units of activity during the year |
| Declining-balance | Decreasing amount | Book value at beginning of year × Declining-balance rate |

Companies make revisions of periodic depreciation in present and future periods, not retroactively. They determine the new annual depreciation by dividing the depreciable cost at the time of the revision by the remaining useful life.

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**3 Explain how to account for the disposal of plant assets.**

The accounting for disposal of a plant asset through retirement or sale is as follows. (a) Eliminate the book value of the plant asset at the date of disposal. (b) Record cash proceeds, if any. (c) Account for the difference between the book value and the cash proceeds as a gain or loss on disposal (d) Record the cash paid or received.

**4 Describe how to account for natural resources and intangible assets.**

Companies compute depletion cost per unit by dividing the total cost of the natural resource minus salvage value by the number of units estimated to be in the resource. They then multiply the depletion cost per unit by the number of units extracted.

The process of allocating the cost of an intangible asset is referred to as amortization. The cost of intangible assets with indefinite lives is not amortized. Companies normally use the straight-line method for amortizing intangible assets.

**5 Discuss how plant assets, natural resources, and intangible assets are reported and analyzed.**

Companies usually combine plant assets and natural resources under property, plant, and equipment. They show intangibles separately under intangible assets. Either within the balance sheet or in the notes, companies should disclose the balances of the major classes of assets, such as land, buildings, and equipment, and accumulated depreciation by major classes or in total. They also should describe the depreciation and amortization methods used, and should disclose the amount of depreciation and amortization expense for the period. The asset turnover measures the productivity of a company's assets in generating sales.

***6 Explain how to account for the exchange of plant assets.**

Ordinarily, companies record a gain or loss on the exchange of plant assets. The rationale for recognizing a gain or loss is that most exchanges have commercial substance. An exchange has commercial substance if the future cash flows change as a result of the exchange.

## Glossary Review

**Accelerated-depreciation method** Depreciation method that produces higher depreciation expense in the early years than in the later years. (p. 10-12).

**Additions and improvements** Costs incurred to increase the operating efficiency, productive capacity, or useful life of a plant asset. (p. 10-5).

**Amortization** The allocation of the cost of an intangible asset to expense over its useful life in a systematic and rational manner. (p. 10-18).

**Asset turnover** A measure of how efficiently a company uses its assets to generate sales; calculated as net sales divided by average total assets. (p. 10-22).

**Capital expenditures** Expenditures that increase the company's investment in productive facilities. (p. 10-5).

**Copyrights** Exclusive grant from the federal government that allows the owner to reproduce and sell an artistic or published work. (p. 10-19).

**Declining-balance method** Depreciation method that applies a constant rate to the declining book value of the asset and produces a decreasing annual depreciation expense over the useful life of the asset. (p. 10-11).

**Depletion** The allocation of the cost of a natural resource to expense in a rational and systematic manner over the resource's useful life. (p. 10-17).

**Depreciation** The process of allocating to expense the cost of a plant asset over its useful (service) life in a rational and systematic manner. (p. 10-7).

**Franchise (license)** A contractual arrangement under which the franchisor grants the franchisee the right to sell certain products, perform specific services, or use certain trademarks or trade names, usually within a designated geographic area. (p. 10-20).

**Going concern assumption** States that the company will continue in operation for the foreseeable future. (p. 10-7).

**Goodwill** The value of all favorable attributes that relate to a company that is not attributable to any other specific asset. (p. 10-20).

**Impairment** A permanent decline in the fair value of an asset. (p. 10-13).

**Intangible assets** Rights, privileges, and competitive advantages that result from the ownership of long-lived assets that do not possess physical substance. (p. 10-18).

**Materiality concept** If an item would not make a difference in decision-making, a company does not have to follow GAAP in reporting it. (p. 10-5).

**Natural resources** Assets that consist of standing timber and underground deposits of oil, gas, and minerals. (p. 10-17).

**Ordinary repairs** Expenditures to maintain the operating efficiency and productive life of the unit. (p. 10-5).

**Patent** An exclusive right issued by the U.S. Patent Office that enables the recipient to manufacture, sell, or otherwise control an invention for a period of 20 years from the date of the grant. (p. 10-19).

**Plant assets** Tangible resources that are used in the operations of the business and are not intended for sale to customers. (p. 10-2).

**Research and development (R&D) costs** Expenditures that may lead to patents, copyrights, new processes, or new products. (p. 10-21).

**Revenue expenditures** Expenditures that are immediately charged against revenues as an expense. (p. 10-5).

**Salvage value** An estimate of an asset's value at the end of its useful life. (p. 10-8).

**Straight-line method** Depreciation method in which periodic depreciation is the same for each year of the asset's useful life. (p. 10-9).

**Trademark (trade name)** A word, phrase, jingle, or symbol that identifies a particular enterprise or product. (p. 10-19).

**Units-of-activity method** Depreciation method in which useful life is expressed in terms of the total units of production or use expected from an asset. (p. 10-10).

**Useful life** An estimate of the expected productive life, also called service life, of an asset. (p. 10-8).

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## Practice Multiple-Choice Questions

**1.** **(LO 1)** Erin Danielle Company purchased equipment and incurred the following costs.

| | |
|---|---|
| Cash price | $24,000 |
| Sales taxes | 1,200 |
| Insurance during transit | 200 |
| Installation and testing | 400 |
| Total costs | $25,800 |

What amount should be recorded as the cost of the equipment?

**a.** $24,000. **c.** $25,400.
**b.** $25,200. **d.** $25,800.

**2.** **(LO 1)** Additions to plant assets are:

**a.** revenue expenditures.
**b.** debited to the Maintenance and Repairs Expense account.
**c.** debited to the Purchases account.
**d.** capital expenditures.

**3.** **(LO 2)** Depreciation is a process of:

**a.** valuation. **c.** cash accumulation.
**b.** cost allocation. **d.** appraisal.

**4.** **(LO 2)** Micah Bartlett Company purchased equipment on January 1, 2019, at a total invoice cost of $400,000. The equipment has an estimated salvage value of $10,000 and an estimated useful life of 5 years. The amount of accumulated depreciation at December 31, 2020, if the straight-line method of depreciation is used, is:

**a.** $80,000. **c.** $78,000.
**b.** $160,000. **d.** $156,000.

**5.** **(LO 2)** Ann Torbert purchased a truck for $11,000 on January 1, 2019. The truck will have an estimated salvage value of $1,000 at the end of 5 years. Using the units-of-activity method, the balance in accumulated depreciation at December 31, 2020, can be computed by the following formula:

**a.** ($11,000 ÷ Total estimated activity) × Units of activity for 2020.
**b.** ($10,000 ÷ Total estimated activity) × Units of activity for 2020.
**c.** ($11,000 ÷ Total estimated activity) × Units of activity for 2019 and 2020.
**d.** ($10,000 ÷ Total estimated activity) × Units of activity for 2019 and 2020.

**6.** **(LO 2)** Jefferson Company purchased a piece of equipment on January 1, 2020. The equipment cost $60,000 and has an estimated life of 8 years and a salvage value of $8,000. What was the depreciation expense for the asset for 2021 under the double-declining-balance method?

**a.** $6,500. **c.** $15,000.
**b.** $11,250. **d.** $6,562.

**7.** **(LO 2)** When there is a change in estimated depreciation:

**a.** previous depreciation should be corrected.
**b.** current and future years' depreciation should be revised.
**c.** only future years' depreciation should be revised.
**d.** None of the above.

**8.** **(LO 2)** Able Towing Company purchased a tow truck for $60,000 on January 1, 2018. It was originally depreciated on a straight-line basis over 10 years with an assumed salvage value of $12,000. On December 31, 2020, before adjusting entries had been made, the company decided to change the remaining estimated life to 4 years (including 2020) and the salvage value to $2,000. What was the depreciation expense for 2020?

**a.** $6,000. **c.** $15,000.
**b.** $4,800. **d.** $12,100.

**9.** **(LO 3)** Bennie Razor Company has decided to sell one of its old manufacturing machines on June 30, 2020. The machine was purchased for $80,000 on January 1, 2016, and was depreciated on a straight-line basis for 10 years assuming no salvage value. If the machine was sold for $26,000, what was the amount of the gain or loss recorded at the time of the sale?

**a.** $18,000. **c.** $22,000.
**b.** $54,000. **d.** $46,000.

**10.** **(LO 4)** Maggie Sharrer Company expects to extract 20 million tons of coal from a mine that cost $12 million. If no salvage value is expected and 2 million tons are mined in the first year, the entry to record depletion will include a:

**a.** debit to Accumulated Depletion of $2,000,000.
**b.** credit to Depletion Expense of $1,200,000.
**c.** debit to Inventory of $1,200,000.
**d.** credit to Accumulated Depletion of $2,000,000.

**11.** **(LO 4)** Which of the following statements is **false**?

**a.** If an intangible asset has a finite life, it should be amortized.
**b.** The amortization period of an intangible asset can exceed 20 years.
**c.** Goodwill is recorded only when a business is purchased.
**d.** Research and development costs are expensed when incurred, except when the research and development expenditures result in a successful patent.

**12.** **(LO 4)** Martha Beyerlein Company incurred $150,000 of research and development costs in its laboratory to develop a patent granted on January 2, 2020. On July 31, 2020, Beyerlein paid $35,000 for legal fees in a successful defense of the patent. The total amount debited to Patents through July 31, 2020, should be:

**a.** $150,000. **c.** $185,000.
**b.** $35,000. **d.** $170,000.

**13.** **(LO 5)** Indicate which of the following statements is **true**.

**a.** Since intangible assets lack physical substance, they need be disclosed only in the notes to the financial statements.
**b.** Goodwill should be reported as a contra account in the owner's equity section.
**c.** Totals of major classes of assets can be shown in the balance sheet, with asset details disclosed in the notes to the financial statements.
**d.** Intangible assets are typically combined with plant assets and natural resources and shown in the property, plant, and equipment section.

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**14.** **(LO 5)** Lake Coffee Company reported net sales of $180,000, net income of $54,000, beginning total assets of $200,000, and ending total assets of $300,000. What was the company's asset turnover?

**a.** 0.90. **c.** 0.72.
**b.** 0.20. **d.** 1.39.

***15.** **(LO 6)** Schopenhauer Company exchanged an old machine, with a book value of $39,000 and a fair value of $35,000, and paid $10,000 cash for a similar new machine. The transaction has commercial substance. At what amount should the machine acquired in the exchange be recorded on Schopenhauer's books?

**a.** $45,000. **c.** $49,000.
**b.** $46,000. **d.** $50,000.

***16.** **(LO 6)** In exchanges of assets in which the exchange has commercial substance:

**a.** neither gains nor losses are recognized immediately.
**b.** gains, but not losses, are recognized immediately.
**c.** losses, but not gains, are recognized immediately.
**d.** both gains and losses are recognized immediately.

## Solutions

**1. d.** All of the costs ($1,200 + $200 + $400) in addition to the cash price ($24,000) should be included in the cost of the equipment because they were necessary expenditures to acquire the asset and make it ready for its intended use. The other choices are therefore incorrect.

**2. d.** When an addition is made to plant assets, it is intended to increase productive capacity, increase the assets' useful life, or increase the efficiency of the assets. This is called a capital expenditure. The other choices are incorrect because (a) additions to plant assets are not revenue expenditures because the additions will have a long-term useful life whereas revenue expenditures are minor repairs and maintenance that do not prolong the life of the assets; (b) additions to plant assets are debited to Plant Assets, not Maintenance and Repairs Expense, because the Maintenance and Repairs Expense account is used to record expenditures not intended to increase the life of the assets; and (c) additions to plant assets are debited to Plant Assets, not Purchases, because the Purchases account is used to record assets intended for resale (inventory).

**3. b.** Depreciation is a process of allocating the cost of an asset over its useful life, not a process of (a) valuation, (c) cash accumulation, or (d) appraisal.

**4. d.** Accumulated depreciation will be the sum of 2 years of depreciation expense. Annual depreciation for this asset is ($400,000 − $10,000)/5 = $78,000. The sum of 2 years' depreciation is therefore $156,000 ($78,000 + $78,000), not (a) $80,000, (b) $160,000, or (c) $78,000.

**5. d.** The units-of-activity method takes salvage value into consideration; therefore, the depreciable cost is $10,000. This amount is divided by total estimated activity. The resulting number is multiplied by the units of activity used in 2019 and 2020 to compute the accumulated depreciation at the end of 2020, the second year of the asset's use. The other choices are therefore incorrect.

**6. b.** For the double-declining method, the depreciation rate would be 25% or (1/8 × 2). For 2020, annual depreciation expense is $15,000 ($60,000 book value × 25%); for 2021, annual depreciation expense is $11,250 [($60,000 − $15,000) × 25%], not (a) $6,500, (c) $15,000, or (d) $6,562.

**7. b.** When there is a change in estimated depreciation, the current and future years' depreciation computation should reflect the new estimates. The other choices are incorrect because (a) previous years' depreciation should not be adjusted when new estimates are made for depreciation, and (c) when there is a change in estimated depreciation, the current and future years' depreciation computation should reflect the new estimates. Choice (d) is wrong because there is a correct answer.

**8. d.** First, calculate accumulated depreciation from January 1, 2018, through December 31, 2019, which is $9,600 {[($60,000 − $12,000)/10 years] × 2 years}. Next, calculate the revised depreciable cost, which is $48,400 ($60,000 − $9,600 − $2,000). Thus, the depreciation expense for 2020 is $12,100 ($48,400/4), not (a) $6,000, (b) $4,800, or (c) $15,000.

**9. a.** First, the book value needs to be determined. The accumulated depreciation as of June 30, 2020, is $36,000 [($80,000/10) × 4.5 years]. Thus, the cost of the machine less accumulated depreciation equals $44,000 ($80,000 − $36,000). The loss recorded at the time of sale is $18,000 ($26,000 − $44,000), not (b) $54,000, (c) $22,000, or (d) $46,000.

**10. c.** The amount of depletion is determined by computing the depletion per unit ($12 million/20 million tons = $0.60 per ton) and then multiplying that amount times the number of units extracted during the year (2 million tons × $0.60 = $1,200,000). This amount is debited to Inventory and credited to Accumulated Depletion. The other choices are therefore incorrect.

**11. d.** Research and development (R&D) costs are expensed when incurred, regardless of whether the research and development expenditures result in a successful patent or not. The other choices are true statements.

**12. b.** Because the $150,000 was spent developing the patent rather than buying it from another firm, it is debited to Research and Development Expense. Only the $35,000 spent on the successful defense can be debited to Patents, not (a) $150,000, (c) $185,000, or (d) $170,000.

**13. c.** Reporting only totals of major classes of assets in the balance sheet is appropriate. Additional details can be shown in the notes to the financial statements. The other choices are false statements.

**14. c.** Asset turnover = Net sales ($180,000)/Average total assets [($200,000 + $300,000)/2] = 0.72 times, not (a) 0.90, (b) 0.20, or (d) 1.39 times.

***15. a.** When an exchange has commercial substance, the debit to the new asset is equal to the fair value of the old asset plus the cash paid ($35,000 + $10,000 = $45,000), not (b) $46,000, (c) $49,000, or (d) $50,000.

***16. d.** Both gains and losses are recognized immediately when an exchange of assets has commercial substance. The other choices are therefore incorrect.

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## Practice Brief Exercises

**1. (LO 2)** Fulmer Company acquires a delivery truck at a cost of $50,000. The truck is expected to have a salvage value of $5,000 at the end of its 5-year useful life. Compute annual depreciation expense for the first and second years using (a) the straight-line method and (b) double-declining balance.

*Compute straight-line and declining-balance depreciation.*

### Solution

**1. a.** Depreciable cost of $45,000, ($50,000 − $5,000). With a 5-year useful life, annual depreciation is $9,000, ($45,000 ÷ 5). Under the straight-line method, depreciation is the same each year. Thus, depreciation is $9,000 for both the first and second years.

**b.** The declining-balance rate is 40% (20% × 2), which is applied to book value at the beginning of the year. The computations are:

| | Book Value | × | Rate | = | Depreciation |
|---|---|---|---|---|---|
| Year 1 | $50,000 | | 40% | | $20,000 |
| Year 2 | ($50,000 − $20,000) | | 40% | | $12,000 |

**2. (LO 3)** Giolito Company sells equipment on August 31, 2020, for $20,000 cash. The equipment originally cost $60,000 and as of January 1, 2020, had accumulated depreciation of $38,000. Depreciation for the first 8 months of 2020 is $6,000. Prepare the journal entries to (a) update depreciation to August 31, 2020 and (b) record the sale of the equipment.

*Prepare entries for disposal by sale.*

### Solution

| | | | |
|---|---|---|---|
| **2. a.** Depreciation Expense | 6,000 | |
| Accumulated Depreciation—Equipment | | 6,000 |
| **b.** Cash | 20,000 | |
| Accumulated Depreciation—Equipment | 44,000 | |
| Equipment | | 60,000 |
| Gain on Disposal of Plant Assets | | 4,000 |

| | |
|---|---|
| Cost of equipment | $60,000 |
| Less: Accumulated depreciation | 44,000* |
| Book value at date of disposal | 16,000 |
| Proceeds from sale | 20,000 |
| Gain on disposal | $ 4,000 |

*$38,000 + $6,000

**3. (LO 4)** **Financial Statement** Lucas Company acquires a limited-life franchise for $200,000 on January 2, 2020. Its estimated useful life is 10 years. (a) Prepare the journal entry to record amortization expense for the first year. (b) Show how this franchise is reported on the balance sheet at the end of the first year.

*Prepare amortization expense entry and balance sheet presentation for intangibles.*

### Solution

| | | |
|---|---|---|
| **3. a.** Amortization Expense ($200,000 ÷ 10) | 20,000 | |
| Franchises | | 20,000 |
| **b.** Intangible assets | | |
| Franchises | | $180,000 |

## Practice Exercises

**1. (LO 2)** Numo Company purchased a new machine on October 1, 2020, at a cost of $145,000. The company estimated that the machine will have a salvage value of $25,000.The machine is expected to be used for 20,000 working hours during its 5-year life.

*Determine depreciation for partial periods*

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**Instructions**

Compute the depreciation expense under the following methods for the year indicated.

**a.** Straight-line for 2020.

**b.** Units-of-activity for 2020, assuming machine usage was 3,400 hours.

**c.** Declining-balance using double the straight-line rate for 2020 and 2021.

**Solution**

**1. a.** Straight-line method:

$$\left(\frac{\$145{,}000 - \$25{,}000}{5}\right) = \$24{,}000 \text{ per year}$$

2020 depreciation = $24,000 × 3/12 = $6,000

**b.** Units-of-activity method:

$$\left(\frac{\$145{,}000 - \$25{,}000}{20{,}000}\right) = \$6.00 \text{ per hour}$$

2020 depreciation = 3,400 hours × $6.00 = $20,400

**c.** Declining-balance method:

2020 depreciation = $145,000 × 40% × 3/12 = $14,500

Book value January 1, 2021 = $145,000 − $14,500 = $130,500

2021 depreciation = $130,500 × 40% = $52,200

*Prepare entries to set up appropriate accounts for different intangibles; amortize intangible assets.*

**2. (LO 4)** Henning Company, organized in 2020, has the following transactions related to intangible assets.

| | | |
|---|---|---|
| 1/2/20 | Purchased patent (7-year life) | $840,000 |
| 4/1/20 | Goodwill purchased (indefinite life) | 450,000 |
| 7/1/20 | 10-year franchise: expiration date 7/1/2030 | 330,000 |
| 9/1/20 | Research and development costs | 210,000 |

**Instructions**

Prepare the necessary entries to record these intangibles. All costs incurred were for cash. Make the adjusting entries as of December 31, 2020, recording any necessary amortization and reflecting all balances accurately as of that date.

**Solution**

**2.**

| | | | |
|---|---|---|---|
| 1/2/20 | Patents | 840,000 | |
| | Cash | | 840,000 |
| 4/1/20 | Goodwill | 450,000 | |
| | Cash | | 450,000 |
| | (Part of the entry to record purchase of another company) | | |
| 7/1/20 | Franchises | 330,000 | |
| | Cash | | 330,000 |
| 9/1/20 | Research and Development Expense | 210,000 | |
| | Cash | | 210,000 |
| 12/31/20 | Amortization Expense | | |
| | ($840,000 ÷ 7) + [($330,000 ÷ 10) × 1/2] | 136,500 | |
| | Patents | | 120,000 |
| | Franchises | | 16,500 |

Ending balances, 12/31/20:

Patents = $720,000 ($840,000 − $120,000)

Goodwill = $450,000

Franchises = $313,500 ($330,000 − $16,500)

R&D expense = $210,000

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## Practice Problems

**1. (LO 2)** DuPage Company purchases a factory machine at a cost of $18,000 on January 1, 2020. DuPage expects the machine to have a salvage value of $2,000 at the end of its 4-year useful life.

During its useful life, the machine is expected to be used 160,000 hours. Actual annual hourly use was 2020, 40,000; 2021, 60,000; 2022, 35,000; and 2023, 25,000.

*Compute depreciation under different methods.*

### Instructions

Prepare depreciation schedules for the following methods: (a) straight-line, (b) units-of-activity, and (c) declining-balance using double the straight-line rate.

### Solution

**1. a.**

**Straight-Line Method**

| | Computation | | | | Annual | End of Year | |
|---|---|---|---|---|---|---|---|
| Year | Depreciable Cost* | × | Depreciation Rate | = | Depreciation Expense | Accumulated Depreciation | Book Value |
| 2020 | $16,000 | | 25% | | $4,000 | $ 4,000 | $14,000** |
| 2021 | 16,000 | | 25% | | 4,000 | 8,000 | 10,000 |
| 2022 | 16,000 | | 25% | | 4,000 | 12,000 | 6,000 |
| 2023 | 16,000 | | 25% | | 4,000 | 16,000 | 2,000 |

*$18,000 − $2,000.
**$18,000 − $4,000.

**b.**

**Units-of-Activity Method**

| | Computation | | | | Annual | End of Year | |
|---|---|---|---|---|---|---|---|
| Year | Units of Activity | × | Depreciable Cost/Unit | = | Depreciation Expense | Accumulated Depreciation | Book Value |
| 2020 | 40,000 | | $0.10* | | $4,000 | $ 4,000 | $14,000 |
| 2021 | 60,000 | | 0.10 | | 6,000 | 10,000 | 8,000 |
| 2022 | 35,000 | | 0.10 | | 3,500 | 13,500 | 4,500 |
| 2023 | 25,000 | | 0.10 | | 2,500 | 16,000 | 2,000 |

*($18,000 − $2,000) ÷ 160,000.

**c.**

**Declining-Balance Method**

| | Computation | | | | Annual | End of Year | |
|---|---|---|---|---|---|---|---|
| Year | Book Value Beginning of Year | × | Depreciation Rate* | = | Depreciation Expense | Accumulated Depreciation | Book Value |
| 2020 | $18,000 | | 50% | | $9,000 | $ 9,000 | $9,000 |
| 2021 | 9,000 | | 50% | | 4,500 | 13,500 | 4,500 |
| 2022 | 4,500 | | 50% | | 2,250 | 15,750 | 2,250 |
| 2023 | 2,250 | | 50% | | 250** | 16,000 | 2,000 |

*¼ × 2.
**Adjusted to $250 because ending book value should not be less than expected salvage value.

**2. (LO 3)** On January 1, 2020, Skyline Limousine Co. purchased a limo at an acquisition cost of $28,000. The vehicle has been depreciated by the straight-line method using a 4-year service life and a $4,000 salvage value. The company's fiscal year ends on December 31.

*Record disposal of plant asset.*

### Instructions

Prepare the journal entry or entries to record the disposal of the limousine assuming that it was:

**a.** Retired and scrapped on January 1, 2024.

**b.** Sold for $5,000 on July 1, 2023.

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**Solution**

| | | | | |
|---|---|---|---|---|
| **2. a.** | 1/1/24 | Accumulated Depreciation—Equipment | 24,000 | |
| | | Loss on Disposal of Plant Assets | 4,000 | |
| | | Equipment | | 28,000 |
| | | (To record retirement of limousine) | | |
| **b.** | 7/1/23 | Depreciation Expense* | 3,000 | |
| | | Accumulated Depreciation—Equipment | | 3,000 |
| | | (To record depreciation to date of disposal) | | |
| | | Cash | 5,000 | |
| | | Accumulated Depreciation—Equipment** | 21,000 | |
| | | Loss on Disposal of Plant Assets | 2,000 | |
| | | Equipment | | 28,000 |
| | | (To record sale of limousine) | | |

*[($28,000 − $4,000) ÷ 4] × $\frac{1}{2}$.

**[($28,000 − $4,000) ÷ 4] × 3 = $18,000; $18,000 + $3,000.

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendix to the chapter.

## Questions

**1.** Sid Watney is uncertain about the applicability of the historical cost principle to plant assets. Explain the principle to Sid.

**2.** What are some examples of land improvements?

**3.** Lynn Company acquires the land and building owned by Noble Company. What types of costs may be incurred to make the asset ready for its intended use if Lynn Company wants to use (a) only the land, and (b) both the land and the building?

**4.** In a recent newspaper release, the president of Downs Company asserted that something has to be done about depreciation. The president said, "Depreciation does not come close to accumulating the cash needed to replace the asset at the end of its useful life." What is your response to the president?

**5.** Andrew is studying for the next accounting examination. He asks your help on two questions: (a) What is salvage value? (b) Is salvage value used in determining periodic depreciation under each depreciation method? Answer Andrew's questions.

**6.** Contrast the straight-line method and the units-of-activity method as to (a) useful life, and (b) the pattern of periodic depreciation over useful life.

**7.** Contrast the effects of the three depreciation methods on annual depreciation expense.

**8.** In the fourth year of an asset's 5-year useful life, the company decides that the asset will have a 6-year service life. How should the revision of depreciation be recorded? Why?

**9.** Distinguish between revenue expenditures and capital expenditures during useful life.

**10.** How is a gain or loss on the sale of a plant asset computed?

**11.** Romero Corporation owns a machine that is fully depreciated but is still being used. How should Romero account for this asset and report it in the financial statements?

**12.** What are natural resources, and what are their distinguishing characteristics?

**13.** Explain the concept of depletion and how it is computed.

**14.** What are the similarities and differences between the terms depreciation, depletion, and amortization?

**15.** Rowand Company hires an accounting intern who says that intangible assets should always be amortized over their legal lives. Is the intern correct? Explain.

**16.** Goodwill has been defined as the value of all favorable attributes that relate to a business. What types of attributes could result in goodwill?

**17.** Jimmy West, a business major, is working on a case problem for one of his classes. In the case problem, the company needs to raise cash to market a new product it developed. Ron Thayer, an engineering major, takes one look at the company's balance sheet and says, "This company has an awful lot of goodwill. Why don't you recommend that they sell some of it to raise cash?" How should Jimmy respond to Ron?

**18.** Under what conditions is goodwill recorded?

**19.** Often, research and development costs provide companies with benefits that last a number of years. (For example, these costs can lead to the development of a patent that will increase the company's income for many years.) However, generally accepted accounting principles require that such costs be recorded as an expense when incurred. Why?

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**20.** **McDonald's Corporation** reports total average assets of $28.9 billion and net sales of $20.5 billion. What is the company's asset turnover?

**21.** Stark Corporation and Zuber Corporation operate in the same industry. Stark uses the straight-line method to account for depreciation; Zuber uses an accelerated method. Explain what complications might arise in trying to compare the results of these two companies.

**22.** Gomez Corporation uses straight-line depreciation for financial reporting purposes but an accelerated method for tax purposes. Is it acceptable to use different methods for the two purposes? What is Gomez's motivation for doing this?

**23.** You are comparing two companies in the same industry. You have determined that Ace Corp. depreciates its plant assets over a 40-year life, whereas Liu Corp. depreciates its plant assets over a 20-year life. Discuss the implications this has for comparing the results of the two companies.

**24.** Sosa Company is doing significant work to revitalize its warehouses. It is not sure whether it should capitalize these costs or expense them. What are the implications for current-year net income and future net income of expensing versus capitalizing these costs?

*__25.__ When assets are exchanged in a transaction involving commercial substance, how is the gain or loss on disposal of plant assets computed?

*__26.__ Unruh Refrigeration Company trades in an old machine on a new model when the fair value of the old machine is greater than its book value. The transaction has commercial substance. Should Unruh recognize a gain on disposal of plant assets? If the fair value of the old machine is less than its book value, should Unruh recognize a loss on disposal of plant assets?

## Brief Exercises

**BE10.1 (LO 1)** The following expenditures were incurred by McCoy Company in purchasing land: cash price $50,000, accrued taxes $3,000, attorneys' fees $2,500, real estate broker's commission $2,000, and clearing and grading $3,500. What is the cost of the land?

*Determine the cost of land.*

**BE10.2 (LO 1)** Rich Castillo Company incurs the following expenditures in purchasing a truck: cash price $30,000, accident insurance $2,000, sales taxes $2,100, motor vehicle license $100, and painting and lettering $400. What is the cost of the truck?

*Determine the cost of a truck.*

**BE10.3 (LO 1)** Flaherty Company had the following two transactions related to its delivery truck.

1. Paid $45 for an oil change.
2. Paid $400 to install special gear unit, which increases the operating efficiency of the truck.

Prepare Flaherty's journal entries to record these two transactions.

*Prepare entries for delivery truck costs.*

**BE10.4 (LO 2)** Corales Company acquires a delivery truck at a cost of $38,000. The truck is expected to have a salvage value of $6,000 at the end of its 4-year useful life. Compute annual depreciation expense for the first and second years using the straight-line method.

*Compute straight-line depreciation.*

**BE10.5 (LO 2)** Chisenhall Company purchased land and a building on January 1, 2020. Management's best estimate of the value of the land was $100,000 and of the building $200,000. However, management told the accounting department to record the land at $220,000 and the building at $80,000. The building is being depreciated on a straight-line basis over 15 years with no salvage value. Why do you suppose management requested this accounting treatment? Is it ethical?

*Compute depreciation and evaluate treatment.*

**BE10.6 (LO 2)** Depreciation information for Corales Company is given in BE10.4. Assuming the declining-balance depreciation rate is double the straight-line rate, compute annual depreciation for the first and second years under the declining-balance method.

*Compute declining-balance depreciation.*

**BE10.7 (LO 2)** Rosco Taxi Service uses the units-of-activity method in computing depreciation on its taxicabs. Each cab is expected to be driven 150,000 miles. Taxi no. 10 cost $39,500 and is expected to have a salvage value of $500. Taxi no. 10 is driven 30,000 miles in year 1 and 20,000 miles in year 2. Compute the depreciation for each year.

*Compute depreciation using the units-of-activity method.*

**BE10.8 (LO 2)** On January 1, 2020, the Morgantown Company ledger shows Equipment $32,000 and Accumulated Depreciation—Equipment $9,000. The depreciation resulted from using the straight-line method with a useful life of 10 years and salvage value of $2,000. On this date, the company concludes that the equipment has a remaining useful life of only 4 years with the same salvage value. Compute the revised annual depreciation.

*Compute revised depreciation.*

**BE10.9 (LO 3)** Prepare journal entries to record the following.

**a.** Sound Tracker Company retires its delivery equipment, which cost $41,000. Accumulated depreciation is also $41,000 on this delivery equipment. No salvage value is received.

*Prepare entries for disposal by retirement.*

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**b.** Assume the same information as (a), except that accumulated depreciation is $37,000, instead of $41,000, on the delivery equipment.

*Prepare entries for disposal by sale.*

**BE10.10 (LO 3)** Gunkelson Company sells equipment on September 30, 2020, for $18,000 cash. The equipment originally cost $72,000 and as of January 1, 2020, had accumulated depreciation of $42,000. Depreciation for the first 9 months of 2020 is $5,250. Prepare the journal entries to (a) update depreciation to September 30, 2020, and (b) record the sale of the equipment.

*Prepare depletion entry and balance sheet presentation for natural resources.*

**BE10.11 (LO 4)** **Financial Statement** Franceour Mining Co. purchased for $7 million a mine that is estimated to have 35 million tons of ore and no salvage value. In the first year, 5 million tons of ore are extracted.

**a.** Prepare the journal entry to record depletion for the first year.

**b.** Show how this mine is reported on the balance sheet at the end of the first year.

*Prepare amortization expense entry and balance sheet presentation for intangibles.*

**BE10.12 (LO 4)** **Financial Statement** Campanez Company purchases a patent for $140,000 on January 2, 2020. Its estimated useful life is 10 years.

**a.** Prepare the journal entry to record amortization expense for the first year.

**b.** Show how this patent is reported on the balance sheet at the end of the first year.

*Classify long-lived assets on balance sheet.*

**BE10.13 (LO 5)** **Financial Statement** Information related to plant assets, natural resources, and intangibles at the end of 2020 for Dent Company is as follows: buildings $1,100,000, accumulated depreciation—buildings $600,000, goodwill $410,000, coal mine $500,000, and accumulated depletion—coal mine $108,000. Prepare a partial balance sheet of Dent Company for these items.

*Calculate asset turnover.*

**BE10.14 (LO 5)** In a recent annual report, **Target** reported beginning total assets of $44.1 billion, ending total assets of $44.5 billion, and net sales of $63.4 billion. Compute Target's asset turnover.

*Prepare entry for disposal by exchange.*

***BE10.15 (LO 6)** Olathe Company exchanges old delivery equipment for new delivery equipment. The book value of the old delivery equipment is $31,000 (cost $61,000 less accumulated depreciation $30,000). Its fair value is $24,000, and cash of $5,000 is paid. Prepare the entry to record the exchange, assuming the transaction has commercial substance.

*Prepare entry for disposal by exchange.*

***BE10.16 (LO 6)** Assume the same information as BE10.15, except that the fair value of the old delivery equipment is $33,000. Prepare the entry to record the exchange.

## DO IT! Exercises

*Explain accounting for cost of plant assets.*

**DO IT! 10.1 (LO 1)** Lofton Company purchased a delivery truck. The total cash payment was $27,900, including the following items.

| | |
|---|---|
| Negotiated purchase price | $24,000 |
| Installation of special shelving | 1,100 |
| Painting and lettering | 900 |
| Motor vehicle license | 100 |
| Annual insurance policy | 500 |
| Sales tax | 1,300 |
| Total paid | $27,900 |

Explain how each of these costs would be accounted for.

*Calculate depreciation expense and make journal entry.*

**DO IT! 10.2a (LO 2)** On January 1, 2020, Emporia Country Club purchased a new riding mower for $15,000. The mower is expected to have an 8-year life with a $3,000 salvage value. What journal entry would Emporia make at December 31, 2020, if it uses straight-line depreciation?

*Calculate revised depreciation*

**DO IT! 10.2b (LO 2)** Pinewood Corporation purchased a piece of equipment for $70,000. It estimated an 8-year life and $2,000 salvage value. At the end of year four (before the depreciation adjustment), it estimated the new total life to be 10 years and the new salvage value to be $6,000. Compute the revised depreciation.

*Make journal entries to record plant asset disposal.*

**DO IT! 10.3 (LO 3)** Napoli Manufacturing has old equipment that cost $52,000. The equipment has accumulated depreciation of $28,000. Napoli has decided to sell the equipment.

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**a.** What entry would Napoli make to record the sale of the equipment for $26,000 cash?

**b.** What entry would Napoli make to record the sale of the equipment for $15,000 cash?

**DO IT! 10.4 (LO 4)** Match the statement with the term most directly associated with it. *Match intangibles classifications concepts.*

| | |
|---|---|
| Goodwill | Amortization |
| Intangible assets | Franchises |
| Research and development costs | |

**1.** _____ Rights, privileges, and competitive advantages that result from the ownership of long-lived assets that do not possess physical substance.

**2.** _____ The allocation of the cost of an intangible asset to expense in a rational and systematic manner.

**3.** _____ A right to sell certain products or services, or use certain trademarks or trade names, within a designated geographic area.

**4.** _____ Costs incurred by a company that often lead to patents or new products. These costs must be expensed as incurred.

**5.** _____ The excess of the cost of a company over the fair value of the net assets acquired.

**DO IT! 10.5 (LO 5)** For 2020, Sale Company reported beginning total assets of $300,000 and ending total assets of $340,000. Its net income for this period was $50,000, and its net sales were $400,000. Compute the company's asset turnover for 2020. *Calculate asset turnover.*

## Exercises

**E10.1 (LO 1)** Writing The following expenditures relating to plant assets were made by Prather Company during the first 2 months of 2020. *Determine cost of plant acquisitions.*

1. Paid $5,000 of accrued taxes at time plant site was acquired.
2. Paid $200 insurance to cover possible accident loss on new factory machinery while the machinery was in transit.
3. Paid $850 sales taxes on new delivery truck.
4. Paid $17,500 for parking lots and driveways on new plant site.
5. Paid $250 to have company name and advertising slogan painted on new delivery truck.
6. Paid $8,000 for installation of new factory machinery.
7. Paid $900 for one-year accident insurance policy on new delivery truck.
8. Paid $75 motor vehicle license fee on the new truck.

### Instructions

**a.** Explain the application of the historical cost principle in determining the acquisition cost of plant assets.

**b.** List the numbers of the foregoing transactions, and opposite each indicate the account title to which each expenditure should be debited.

**E10.2 (LO 1)** Benedict Company incurred the following costs. *Determine property, plant, and equipment costs.*

| | |
|---|---|
| **1.** Sales tax on factory machinery purchased | $ 5,000 |
| **2.** Painting of and lettering on truck immediately upon purchase | 700 |
| **3.** Installation and testing of factory machinery | 2,000 |
| **4.** Real estate broker's commission on land purchased | 3,500 |
| **5.** Insurance premium paid for first year's insurance on new truck | 880 |
| **6.** Cost of landscaping on property purchased | 7,200 |
| **7.** Cost of paving parking lot for new building constructed | 17,900 |
| **8.** Cost of clearing, draining, and filling land | 13,300 |
| **9.** Architect's fees on self-constructed building | 10,000 |

### Instructions

Indicate to which account Benedict would debit each of the costs.

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*Determine acquisition costs of land.*

**E10.3 (LO 1)** On March 1, 2020, Westmorlan Company acquired real estate on which it planned to construct a small office building. The company paid $75,000 in cash. An old warehouse on the property was razed at a cost of $8,600; the salvaged materials were sold for $1,700. Additional expenditures before construction began included $1,100 attorney's fee for work concerning the land purchase, $5,000 real estate broker's fee, $7,800 architect's fee, and $14,000 to put in driveways and a parking lot.

**Instructions**

**a.** Determine the amount to be reported as the cost of the land.

**b.** For each cost not used in part (a), indicate the account to be debited.

*Understand depreciation concepts.*

**E10.4 (LO 2)** Tom Parkey has prepared the following list of statements about depreciation.

1. Depreciation is a process of asset valuation, not cost allocation.
2. Depreciation provides for the proper matching of expenses with revenues.
3. The book value of a plant asset should approximate its fair value.
4. Depreciation applies to three classes of plant assets: land, buildings, and equipment.
5. Depreciation does not apply to a building because its usefulness and revenue-producing ability generally remain intact over time.
6. The revenue-producing ability of a depreciable asset will decline due to wear and tear and to obsolescence.
7. Recognizing depreciation on an asset results in an accumulation of cash for replacement of the asset.
8. The balance in accumulated depreciation represents the total cost that has been charged to expense.
9. Depreciation expense and accumulated depreciation are reported on the income statement.
10. Four factors affect the computation of depreciation: cost, useful life, salvage value, and residual value.

**Instructions**

Identify each statement as true or false. If false, indicate how to correct the statement.

*Compute depreciation under units-of-activity method.*

**E10.5 (LO 2)** Yello Bus Lines uses the units-of-activity method in depreciating its buses. One bus was purchased on January 1, 2020, at a cost of $148,000. Over its 4-year useful life, the bus is expected to be driven 100,000 miles. Salvage value is expected to be $8,000.

**Instructions**

**a.** Compute the depreciable cost per unit.

**b.** Prepare a depreciation schedule assuming actual mileage was: 2020, 26,000; 2021, 32,000; 2022, 25,000; and 2023, 17,000.

*Determine depreciation for partial periods.*

**E10.6 (LO 2)** Rottino Company purchased a new machine on October 1, 2020, at a cost of $150,000. The company estimated that the machine will have a salvage value of $12,000. The machine is expected to be used for 10,000 working hours during its 5-year life.

**Instructions**

Compute the depreciation expense under the following methods for the year indicated.

**a.** Straight-line for 2020.

**b.** Units-of-activity for 2020, assuming machine usage was 1,700 hours.

**c.** Declining-balance using double the straight-line rate for 2020 and 2021.

*Compute depreciation using different methods.*

**E10.7 (LO 2)** **Financial Statement** Linton Company purchased a delivery truck for $34,000 on January 1, 2020. The truck has an expected salvage value of $2,000, and is expected to be driven 100,000 miles over its estimated useful life of 8 years. Actual miles driven were 15,000 in 2020 and 12,000 in 2021.

**Instructions**

**a.** Compute depreciation expense for 2020 and 2021 using (1) the straight-line method, (2) the units-of-activity method, and (3) the double-declining-balance method.

**b.** Assume that Linton uses the straight-line method.

**1.** Prepare the journal entry to record 2020 depreciation.

**2.** Show how the truck would be reported in the December 31, 2020, balance sheet.

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**E10.8 (LO 2)** Terry Wade, the new controller of Hellickson Company, has reviewed the expected useful lives and salvage values of selected depreciable assets at the beginning of 2020. His findings are as follows. *Compute revised annual depreciation.*

| Type of Asset | Date Acquired | Cost | Accumulated Depreciation 1/1/20 | Useful Life in Years | | Salvage Value | |
|---|---|---|---|---|---|---|---|
| | | | | Old | Proposed | Old | Proposed |
| Building | 1/1/14 | $800,000 | $114,000 | 40 | 50 | $40,000 | $26,000 |
| Warehouse | 1/1/15 | 100,000 | 19,000 | 25 | 20 | 5,000 | 6,000 |

All assets are depreciated by the straight-line method. Hellickson Company uses a calendar year in preparing annual financial statements. After discussion, management has agreed to accept Terry's proposed changes.

### Instructions

**a.** Compute the revised annual depreciation on each asset in 2020. (Show computations.)

**b.** Prepare the entry (or entries) to record depreciation on the building in 2020.

**E10.9 (LO 3)** Presented below are selected transactions at Ridge Company for 2020. *Journalize entries for disposal of plant assets.*

Jan. 1 Retired a piece of machinery that was purchased on January 1, 2010. The machine cost $62,000 on that date. It had a useful life of 10 years with no salvage value.

June 30 Sold a computer that was purchased on January 1, 2017. The computer cost $45,000. It had a useful life of 5 years with no salvage value. The computer was sold for $14,000.

Dec. 31 Discarded a delivery truck that was purchased on January 1, 2016. The truck cost $33,000. It was depreciated based on a 6-year useful life with a $3,000 salvage value.

### Instructions

Journalize all entries required on the above dates, including entries to update depreciation, where applicable, on assets disposed of. Ridge Company uses straight-line depreciation. (Assume depreciation is up to date as of December 31, 2019.)

**E10.10 (LO 3)** Pryce Company owns equipment that cost $65,000 when purchased on January 1, 2017. It has been depreciated using the straight-line method based on estimated salvage value of $5,000 and an estimated useful life of 5 years. *Journalize entries for disposal of equipment.*

### Instructions

Prepare Pryce Company's journal entries to record the sale of the equipment in these four independent situations.

**a.** Sold for $31,000 on January 1, 2020.

**b.** Sold for $31,000 on May 1, 2020.

**c.** Sold for $11,000 on January 1, 2020.

**d.** Sold for $11,000 on October 1, 2020.

**E10.11 (LO 4)** On July 1, 2020, Friedman Inc. invested $720,000 in a mine estimated to have 900,000 tons of ore of uniform grade. During the last 6 months of 2020, 100,000 tons of ore were mined. *Journalize entries for natural resources depletion.*

### Instructions

**a.** Prepare the journal entry to record depletion.

**b.** Assume that the 100,000 tons of ore were mined, but only 80,000 units were sold. How are the costs applicable to the 20,000 unsold units reported?

**E10.12 (LO 4)** The following are selected 2020 transactions of Pedigo Corporation. *Prepare adjusting entries for amortization.*

Jan. 1 Purchased a small company and recorded goodwill of $150,000. Its useful life is indefinite.

May 1 Purchased for $75,000 a patent with an estimated useful life of 5 years and a legal life of 20 years.

### Instructions

Prepare necessary adjusting entries at December 31 to record amortization required by the events above.

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*Prepare entries to set up appropriate accounts for different intangibles; amortize intangible assets.*

**E10.13 (LO 4)** Gill Company, organized in 2020, has the following transactions related to intangible assets.

| | | |
|---|---|---|
| 1/2/20 | Purchased patent (7-year life) | $595,000 |
| 4/1/20 | Goodwill purchased (indefinite life) | 360,000 |
| 7/1/20 | 10-year franchise; expiration date 7/1/2030 | 480,000 |
| 9/1/20 | Research and development costs | 185,000 |

**Instructions**

Prepare the necessary entries to record these intangibles. All costs incurred were for cash. Make the adjusting entries as of December 31, 2020, recording any necessary amortization and reflecting all balances accurately as of that date.

*Calculate asset turnover.*

**E10.14 (LO 5)** During 2020, Paola Corporation reported net sales of $3,500,000 and net income of $1,500,000. Its balance sheet reported average total assets of $1,400,000.

**Instructions**

Calculate the asset turnover.

*Journalize entries for exchanges.*

***E10.15 (LO 6)** Presented below are two independent transactions. Both transactions have commercial substance.

1. Mercy Co. exchanged old trucks (cost $64,000 less $22,000 accumulated depreciation) plus cash of $17,000 for new trucks. The old trucks had a fair value of $38,000.
2. Pence Inc. trades its used machine (cost $12,000 less $4,000 accumulated depreciation) for a new machine. In addition to exchanging the old machine (which had a fair value of $11,000), Pence also paid cash of $3,000.

**Instructions**

**a.** Prepare the entry to record the exchange of assets by Mercy Co.

**b.** Prepare the entry to record the exchange of assets by Pence Inc.

*Journalize entries for the exchange of plant assets.*

***E10.16 (LO 6)** Rizzo's Delivery Company and Overland's Express Delivery exchanged delivery trucks on January 1, 2020. Rizzo's truck cost $22,000. It has accumulated depreciation of $15,000 and a fair value of $3,000. Overland's truck cost $10,000. It has accumulated depreciation of $8,000 and a fair value of $3,000. The transaction has commercial substance.

**Instructions**

**a.** Journalize the exchange for Rizzo's Delivery Company.

**b.** Journalize the exchange for Overland's Express Delivery.

## Problems: Set A

*Determine acquisition costs of land and building.*

Excel

**P10.1A (LO 1)** Venable Company was organized on January 1. During the first year of operations, the following plant asset expenditures and receipts were recorded in random order.

| | Debit |
|---|---|
| **1.** Cost of filling and grading the land | $ 4,000 |
| **2.** Full payment to building contractor | 690,000 |
| **3.** Real estate taxes on land paid for the current year | 5,000 |
| **4.** Cost of real estate purchased as a plant site (land $100,000 and building $45,000) | 145,000 |
| **5.** Excavation costs for new building | 35,000 |
| **6.** Architect's fees on building plans | 10,000 |
| **7.** Accrued real estate taxes paid at time of purchase of real estate | 2,000 |
| **8.** Cost of parking lots and driveways | 14,000 |
| **9.** Cost of demolishing building to make land suitable for construction of new building | 25,000 |
| | $930,000 |

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| | Credit |
|---|---|
| **10.** Proceeds from salvage of demolished building | $ 3,500 |

### Instructions

Analyze the foregoing transactions using the following column headings. Insert the number of each transaction in the Item space, and insert the amounts in the appropriate columns. For amounts entered in the Other Accounts column, also indicate the account titles.

Totals
Land $172,500
Buildings $735,000

| Item | Land | Buildings | Other Accounts |
|---|---|---|---|

**P10.2A (LO 2)** In recent years, Avery Transportation purchased three used buses. Because of frequent turnover in the accounting department, a different accountant selected the depreciation method for each bus, and various methods were selected. Information concerning the buses is summarized as follows.

*Compute depreciation under different methods.*

| Bus | Acquired | Cost | Salvage Value | Useful Life in Years | Depreciation Method |
|---|---|---|---|---|---|
| 1 | 1/1/18 | $ 96,000 | $ 6,000 | 5 | Straight-line |
| 2 | 1/1/18 | 110,000 | 10,000 | 4 | Declining-balance |
| 3 | 1/1/19 | 92,000 | 8,000 | 5 | Units-of-activity |

For the declining-balance method, the company uses the double-declining rate. For the units-of-activity method, total miles are expected to be 120,000. Actual miles of use in the first 3 years were 2019, 24,000; 2020, 34,000; and 2021, 30,000.

### Instructions

**a.** Compute the amount of accumulated depreciation on each bus at December 31, 2020.

a. Bus 2, 12/31/19, $82,500

**b.** If Bus 2 was purchased on April 1 instead of January 1, what is the depreciation expense for this bus in (1) 2018 and (2) 2019?

**P10.3A (LO 2)** On January 1, 2020, Evers Company purchased the following two machines for use in its production process.

*Compute depreciation under different methods.*

Machine A: The cash price of this machine was $48,000. Related expenditures included: sales tax $1,700, shipping costs $150, insurance during shipping $80, installation and testing costs $70, and $100 of oil and lubricants to be used with the machinery during its first year of operations. Evers estimates that the useful life of the machine is 5 years with a $5,000 salvage value remaining at the end of that time period. Assume that the straight-line method of depreciation is used.

Machine B: The recorded cost of this machine was $180,000. Evers estimates that the useful life of the machine is 4 years with a $10,000 salvage value remaining at the end of that time period.

### Instructions

**a.** Prepare the following for Machine A.

**1.** The journal entry to record its purchase on January 1, 2020.

**2.** The journal entry to record annual depreciation at December 31, 2020.

**b.** Calculate the amount of depreciation expense that Evers should record for Machine B each year of its useful life under the following assumptions.

**1.** Evers uses the straight-line method of depreciation.

**2.** Evers uses the declining-balance method. The rate used is twice the straight-line rate.

b. (2) 2020 DDB depreciation $90,000

**3.** Evers uses the units-of-activity method and estimates that the useful life of the machine is 125,000 units. Actual usage is as follows: 2020, 45,000 units; 2021, 35,000 units; 2022, 25,000 units; 2023, 20,000 units.

**c.** Which method used to calculate depreciation on Machine B reports the highest amount of depreciation expense in year 1 (2020)? The highest amount in year 4 (2023)? The highest total amount over the 4-year period?

**P10.4A (LO 2)** At the beginning of 2018, Mazzaro Company acquired equipment costing $120,000. It was estimated that this equipment would have a useful life of 6 years and a salvage value of $12,000 at that time. The straight-line method of depreciation was considered the most appropriate to use with this type of equipment. Depreciation is to be recorded at the end of each year.

*Calculate revisions to depreciation expense.*

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During 2020 (the third year of the equipment's life), the company's engineers reconsidered their expectations, and estimated that the equipment's useful life would probably be 7 years (in total) instead of 6 years. The estimated salvage value was not changed at that time. However, during 2023 the estimated salvage value was reduced to $5,000.

### Instructions

Indicate how much depreciation expense should be recorded each year for this equipment, by completing the following table.

| Year | Depreciation Expense | Accumulated Depreciation |
|---|---|---|
| 2018 | | |
| 2019 | | |
| 2020 | | |
| 2021 | | |
| 2022 | | |
| 2023 | | |
| 2024 | | |

2024 depreciation expense $17,900

*Journalize a series of equipment transactions related to purchase, sale, retirement, and depreciation.*

**P10.5A (LO 2, 3, 5)** **Financial Statement** At December 31, 2020, Grand Company reported the following as plant assets.

| | | |
|---|---|---|
| Land | | $ 4,000,000 |
| Buildings | $28,500,000 | |
| Less: Accumulated depreciation—buildings | 12,100,000 | 16,400,000 |
| Equipment | 48,000,000 | |
| Less: Accumulated depreciation—equipment | 5,000,000 | 43,000,000 |
| Total plant assets | | $63,400,000 |

During 2021, the following selected cash transactions occurred.

| | | |
|---|---|---|
| April | 1 | Purchased land for $2,130,000. |
| May | 1 | Sold equipment that cost $750,000 when purchased on January 1, 2017. The equipment was sold for $450,000. |
| June | 1 | Sold land purchased on June 1, 2011 for $1,500,000. The land cost $400,000. |
| July | 1 | Purchased equipment for $2,500,000. |
| Dec. | 31 | Retired equipment that cost $500,000 when purchased on December 31, 2011. The company received no proceeds related to salvage. |

### Instructions

**a.** Journalize the above transactions. The company uses straight-line depreciation for buildings and equipment. The buildings are estimated to have a 50-year life and no salvage value. The equipment is estimated to have a 10-year useful life and no salvage value. Update depreciation on assets disposed of at the time of sale or retirement.

b. Depreciation Expense—Buildings $570,000; Equipment $4,800,000

**b.** Record adjusting entries for depreciation for 2021.

c. Total plant assets $61,760,000

**c.** Prepare the plant assets section of Grand's balance sheet at December 31, 2021.

*Record disposals.*

**P10.6A (LO 3)** Ceda Co. has equipment that cost $80,000 and that has been depreciated $50,000.

### Instructions

Record the disposal under the following assumptions.

b. $9,000 loss

**a.** It was scrapped as having no value.

**b.** It was sold for $21,000.

**c.** It was sold for $31,000.

*Prepare entries to record transactions related to acquisition and amortization of intangibles; prepare the intangible assets section.*

**P10.7A (LO 4, 5)** **Financial Statement** The intangible assets section of Sappelt Company at December 31, 2020, is presented below.

| | |
|---|---|
| Patents ($70,000 cost less $7,000 amortization) | $63,000 |
| Franchises ($48,000 cost less $19,200 amortization) | 28,800 |
| Total | $91,800 |

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The patent was acquired in January 2020 and has a useful life of 10 years. The franchise was acquired in January 2017 and also has a useful life of 10 years. The following cash transactions may have affected intangible assets during 2021.

| | |
|---|---|
| Jan. 2 | Paid $27,000 legal costs to successfully defend the patent against infringement by another company. |
| Jan.–June | Developed a new product, incurring $140,000 in research and development costs. A patent was granted for the product on July 1. Its useful life is equal to its legal life. |
| Sept. 1 | Paid $50,000 to an extremely large defensive lineman to appear in commercials advertising the company's products. The commercials will air in September and October. |
| Oct. 1 | Acquired a franchise for $140,000. The franchise has a useful life of 50 years. |

b. Amortization Expense (patents) $10,000
Amortization Expense (franchises) $5,500

c. Total intangible assets $243,300

**Instructions**

**a.** Prepare journal entries to record the transactions above.

**b.** Prepare journal entries to record the 2021 amortization expense.

**c** Prepare the intangible assets section of the balance sheet at December 31, 2021.

**P10.8A (LO 4)** Due to rapid turnover in the accounting department, a number of transactions involving intangible assets were improperly recorded by Goins Company in 2020.

*Prepare entries to correct errors made in recording and amortizing intangible assets.*

1. Goins developed a new manufacturing process, incurring research and development costs of $136,000. The company also purchased a patent for $60,000. In early January, Goins capitalized $196,000 as the cost of the patents. Patent amortization expense of $19,600 was recorded based on a 10-year useful life.
2. On July 1, 2020, Goins purchased a small company and as a result acquired goodwill of $92,000. Goins recorded a half-year's amortization in 2020, based on a 50-year life ($920 amortization). The goodwill has an indefinite life.

**Instructions**

Prepare all journal entries necessary to correct any errors made during 2020. Assume the books have not yet been closed for 2020.

1. R&D Exp. $136,000

**P10.9A (LO 5) Writing** LaPorta Company and Lott Corporation, two corporations of roughly the same size, are both involved in the manufacture of in-line skates. Each company depreciates its plant assets using the straight-line approach. An investigation of their financial statements reveals the following information.

*Calculate and comment on asset turnover.*

| | LaPorta Co. | Lott Corp. |
|---|---|---|
| Net income | $ 800,000 | $1,000,000 |
| Sales revenue | 1,300,000 | 1,180,000 |
| Average total assets | 2,500,000 | 2,000,000 |
| Average plant assets | 1,800,000 | 1,000,000 |

**Instructions**

**a.** For each company, calculate the asset turnover.

**b.** Based on your calculations in part (a), comment on the relative effectiveness of the two companies in using their assets to generate sales and produce net income.

**P10.10A (LO 5) Financial Statement** The adjusted trial balance of Feagler Company for the year ended December 31, 2020, is as follows.

*Prepare financial statements.*

| | Debit | Credit |
|---|---|---|
| Cash | $ 5,500 | |
| Accounts Receivable | 3,100 | |
| Note Receivable (due February 20, 2021) | 2,000 | |
| Inventory | 6,000 | |
| Timberland | 21,000 | |
| Land | 14,000 | |
| Equipment | 35,400 | |
| Patents | 11,000 | |
| Accumulated Depletion | | $ 3,900 |
| Allowance for Doubtful Accounts | | 1,000 |

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| | Debit | Credit |
|---|---|---|
| Accumulated Depreciation—Equipment | | $ 8,300 |
| Notes Payable (due January 15, 2021) | | 4,600 |
| Accounts Payable | | 2,300 |
| Owner's Capital | | 68,500 |
| Sales Revenue | | 52,000 |
| Interest Revenue | | 400 |
| Cost of Goods Sold | $ 23,000 | |
| Salaries and Wages Expense | 11,400 | |
| Depreciation Expense | 2,100 | |
| Amortization Expense | 1,600 | |
| Research and Development Expense | 1,300 | |
| Bad Debt Expense | 500 | |
| License Expense | 300 | |
| Interest Expense | 800 | |
| Loss on Disposal of Plant Assets | 2,000 | |
| Total | $141,000 | $141,000 |

**Instructions**

Net income $9,400

Prepare a multiple-step income statement and retained earnings statement for 2020, and a classified balance sheet as of December 31, 2020.

## Continuing Case

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### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 9.)

**CC10** Natalie is also thinking of buying a van that will be used only for business. Natalie is concerned about the impact of the van's cost on her income statement and balance sheet. She has come to you for advice on calculating the van's depreciation.

*Go to WileyPLUS for complete case details and instructions.*

## Ethics Case

**EC10** Turner Container Company is suffering declining sales of its principal product, nonbiodegradable plastic cartons. The president, Robert Griffin, instructs his controller, Alexis Landrum, to lengthen asset lives to reduce depreciation expense. A processing line of automated plastic extruding equipment, purchased for $3.5 million in January 2020, was originally estimated to have a useful life of 8 years and a salvage value of $300,000. Depreciation has been recorded for 2 years on that basis. Robert wants the estimated life changed to 12 years total, and the straight-line method continued. Alexis is hesitant to make the change, believing it is unethical to increase net income in this manner. Robert says, "Hey, the life is only an estimate, and I've heard that our competition uses a 12-year life on their production equipment."

**Instructions**

**a.** Who are the stakeholders in this situation?

**b.** Is the change in asset life unethical, or is it simply a good business practice by an astute president?

**c.** What is the effect of Robert Griffin's proposed change on income before taxes in the year of change?

## Comprehensive Accounting Cycle Review

**ACR10** Hassellhouf Company's trial balance at December 31, 2020, is as follows. All 2020 transactions have been recorded except for the items described following the trial balance.

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| | Debit | Credit |
|---|---|---|
| Cash | $ 28,000 | |
| Accounts Receivable | 36,800 | |
| Notes Receivable | 10,000 | |
| Interest Receivable | –0– | |
| Inventory | 36,200 | |
| Prepaid Insurance | 3,600 | |
| Land | 20,000 | |
| Buildings | 150,000 | |
| Equipment | 60,000 | |
| Patents | 9,000 | |
| Allowance for Doubtful Accounts | | $ 500 |
| Accumulated Depreciation—Buildings | | 50,000 |
| Accumulated Depreciation—Equipment | | 24,000 |
| Accounts Payable | | 27,300 |
| Salaries and Wages Payable | | –0– |
| Unearned Rent Revenue | | 6,000 |
| Notes Payable (due in 2021) | | 11,000 |
| Interest Payable | | –0– |
| Notes Payable (due after 2021) | | 30,000 |
| Owner's Capital | | 113,600 |
| Owner's Drawings | 12,000 | |
| Sales Revenue | | 905,000 |
| Interest Revenue | | –0– |
| Rent Revenue | | –0– |
| Gain on Disposal of Plant Assets | | –0– |
| Bad Debt Expense | –0– | |
| Cost of Goods Sold | 630,000 | |
| Depreciation Expense | –0– | |
| Insurance Expense | –0– | |
| Interest Expense | –0– | |
| Other Operating Expenses | 61,800 | |
| Amortization Expense | –0– | |
| Salaries and Wages Expense | 110,000 | |
| Total | $1,167,400 | $1,167,400 |

Unrecorded transactions:

1. On May 1, 2020, Hassellhouf purchased equipment for $21,200 plus sales taxes of $1,600 (all paid in cash).
2. On July 1, 2020, Hassellhouf sold for $3,500 equipment which originally cost $5,000. Accumulated depreciation on this equipment at January 1, 2020, was $1,800; 2020 depreciation prior to the sale of the equipment was $450.
3. On December 31, 2020, Hassellhouf sold on account $9,000 of inventory that cost $6,300.
4. Hassellhouf estimates that uncollectible accounts receivable at year-end is $3,500.
5. The note receivable is a one-year, 8% note dated April 1, 2020. No interest has been recorded.
6. The balance in prepaid insurance represents payment of a $3,600 6-month premium on September 1, 2020.
7. The building is being depreciated using the straight-line method over 30 years. The salvage value is $30,000.
8. The equipment owned prior to this year is being depreciated using the straight-line method over 5 years. The salvage value is 10% of cost.
9. The equipment purchased on May 1, 2020, is being depreciated using the straight-line method over 5 years, with a salvage value of $1,800.
10. The patent was acquired on January 1, 2020, and has a useful life of 10 years from that date.
11. Unpaid salaries and wages at December 31, 2020, total $5,200.
12. The unearned rent revenue of $6,000 was received on December 1, 2020, for 3 months' rent.
13. Both the short-term and long-term notes payable are dated January 1, 2020, and carry a 9% interest rate. All interest is payable in the next 12 months.

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b. Totals $1,205,040
d. Total assets $259,200

**Instructions**

**a.** Prepare journal entries for the transactions listed above.

**b.** Prepare an updated December 31, 2020, trial balance.

**c.** Prepare a 2020 income statement and an owner's equity statement.

**d.** Prepare a December 31, 2020, classified balance sheet.

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT10.1** The financial statements of **Apple Inc.** are presented in Appendix A. The complete annual report, including the notes to the financial statements, is available at the company's website.

**Instructions**

Refer to Apple's financial statements and answer the following questions.

**a.** What was the total cost and book value of property, plant, and equipment at September 26, 2015?

**b.** What was the amount of depreciation and amortization expense for each of the three years 2013–2015?

**c.** Using the statement of cash flows, what is the amount of capital spending in 2015 and 2014? (Ignore business acquisitions and intangible assets.)

**d.** Where does the company disclose its intangible assets, and what types of intangibles did it have at September 26, 2015?

### Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT10.2** **PepsiCo, Inc.**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

**Instructions**

**a.** Compute the asset turnover for each company for 2015.

**b.** What conclusions concerning the efficiency of assets can be drawn from these data?

### Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT10.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

**Instructions**

**a.** Compute the asset turnover for each company using the financial statements in Appendices D and E.

**b.** What conclusions concerning the efficiency of assets can be drawn from these data?

### Real-World Focus

**CT10.4** A company's annual report identifies the amount of its plant assets and the depreciation method used.

**Instructions**

Search the Internet for the annual report of a company of your choice and then answer the following questions.

**a.** What is the name of the company?

**b.** What is the Internet address of the annual report?

**c.** At fiscal year-end, what is the net amount of its plant assets?

**d.** What is the accumulated depreciation?

**e.** Which method of depreciation does the company use?

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## Decision-Making Across the Organization

**CT10.5** Pinson Company and Estes Company are two proprietorships that are similar in many respects. One difference is that Pinson Company uses the straight-line method and Estes Company uses the declining-balance method at double the straight-line rate. On January 2, 2018, both companies acquired the depreciable assets shown below.

| Asset | Cost | Salvage Value | Useful Life |
|---|---|---|---|
| Buildings | $360,000 | $20,000 | 40 years |
| Equipment | 130,000 | 10,000 | 10 years |

Including the appropriate depreciation charges, annual net income for the companies in the years 2018, 2019, and 2020 and total income for the 3 years were as follows.

| | 2018 | 2019 | 2020 | Total |
|---|---|---|---|---|
| Pinson Company | $84,000 | $88,400 | $90,000 | $262,400 |
| Estes Company | 68,000 | 76,000 | 85,000 | 229,000 |

At December 31, 2020, the balance sheets of the two companies are similar except that Estes Company has more cash than Pinson Company.

Lynda Peace is interested in buying one of the companies. She comes to you for advice.

### Instructions

With the class divided into groups, answer the following.

**a.** Determine the annual and total depreciation recorded by each company during the 3 years.

**b.** Assuming that Estes Company also uses the straight-line method of depreciation instead of the declining-balance method as in (a), prepare comparative income data for the 3 years.

**c.** Which company should Lynda Peace buy? Why?

## Communication Activity

**CT10.6** The chapter presented some concerns regarding the current accounting standards for research and development expenditures.

### Instructions

Assume that you are either (a) the president of a company that is very dependent on ongoing research and development, writing a memo to the FASB complaining about the current accounting standards regarding research and development, or (b) the FASB member defending the current standards regarding research and development. Your memo should address the following questions.

1. By requiring expensing of R&D, do you think companies will spend less on R&D? Why or why not? What are the possible implications for the competitiveness of U.S. companies?
2. If a company makes a commitment to spend money for R&D, it must believe it has future benefits. Shouldn't these costs therefore be capitalized just like the purchase of any long-lived asset that is believed to have future benefits?

## All About You

**CT10.7** The Feature Story at the beginning of the chapter discussed the company **Rent-A-Wreck**. Note that the trade name Rent-A-Wreck is a very important asset to the company, as it creates immediate product identification. As indicated in the chapter, companies invest substantial sums to ensure that their product is well-known to the consumer. Test your knowledge of who owns some famous brands and their impact on the financial statements.

### Instructions

**a.** Provide an answer to the four multiple-choice questions below.

**1.** Which company owns both Taco Bell and Pizza Hut?

**a.** McDonald's.
**b.** CKE.
**c.** Yum Brands.
**d.** Wendy's.

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2. Dairy Queen belongs to:
   a. Breyer.
   b. Berkshire Hathaway.
   c. GE.
   d. The Coca-Cola Company.
3. Philip Morris, the cigarette maker, is owned by:
   a. Altria.
   b. GE.
   c. Boeing.
   d. ExxonMobil.
4. AOL, a major Internet provider, belongs to:
   a. Microsoft.
   b. Cisco.
   c. NBC.
   d. Time Warner.

**b.** How do you think the value of these brands is reported on the appropriate company's balance sheet?

### FASB Codification Activity

**CT10.8** If your school has a subscription to the FASB Codification, log in and prepare responses to the following.

**a.** What does it mean to capitalize an item?

**b.** What is the definition provided for an intangible asset?

**c.** Your great-uncle, who is a CPA, is impressed that you are taking an accounting class. Based on his experience, he believes that depreciation is something that companies do based on past practice, not on the basis of authoritative guidance. Provide the authoritative literature to support the practice of fixed-asset depreciation.

## A Look at IFRS

**LEARNING OBJECTIVE 7**

Compare the accounting for long-lived assets under GAAP and IFRS.

IFRS follows most of the same principles as GAAP in the accounting for property, plant, and equipment. There are, however, some significant differences in the implementation. IFRS allows the use of revaluation of property, plant, and equipment, and it also requires the use of component depreciation. In addition, there are some significant differences in the accounting for both intangible assets and impairments.

### Key Points

The following are the key similarities and differences between GAAP and IFRS as related to the recording process for long-lived assets.

#### Similarities

- The definition for plant assets for both IFRS and GAAP is essentially the same.
- Both IFRS and GAAP follow the historical cost principle when accounting for property, plant, and equipment at date of acquisition. Cost consists of all expenditures necessary to acquire the asset and make it ready for its intended use.
- Under both IFRS and GAAP, interest costs incurred during construction are capitalized. Recently, IFRS converged to GAAP requirements in this area.
- IFRS also views depreciation as an allocation of cost over an asset's useful life. IFRS permits the same depreciation methods (e.g., straight-line, accelerated, and units-of-activity) as GAAP.
- Under both GAAP and IFRS, changes in the depreciation method used and changes in useful life are handled in current and future periods. Prior periods are not affected. GAAP recently conformed to international standards in the accounting for changes in depreciation methods.
- The accounting for subsequent expenditures (such as ordinary repairs and additions) are essentially the same under IFRS and GAAP.
- The accounting for plant asset disposals is essentially the same under IFRS and GAAP.

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- Initial costs to acquire natural resources are recorded in essentially the same manner under IFRS and GAAP.
- The definition of intangible assets is essentially the same under IFRS and GAAP.
- The accounting for exchanges of nonmonetary assets has recently converged between IFRS and GAAP. GAAP now requires that gains on exchanges of nonmonetary assets be recognized if the exchange has commercial substance. This is the same framework used in IFRS.

**Differences**

- IFRS uses the term **residual value** rather than salvage value to refer to an owner's estimate of an asset's value at the end of its useful life for that owner.
- IFRS allows companies to revalue plant assets to fair value at the reporting date. Companies that choose to use the revaluation framework must follow revaluation procedures. If revaluation is used, it must be applied to all assets in a class of assets. Assets that are experiencing rapid price changes must be revalued on an annual basis, otherwise less frequent revaluation is acceptable.
- IFRS requires component depreciation. **Component depreciation** specifies that any significant parts of a depreciable asset that have different estimated useful lives should be separately depreciated. Component depreciation is allowed under GAAP but is seldom used.
- As in GAAP, under IFRS the costs associated with research and development are segregated into the two components. Costs in the research phase are always expensed under both IFRS and GAAP. Under IFRS, however, costs in the development phase are capitalized as Development Costs once technological feasibility is achieved.
- IFRS permits revaluation of intangible assets (except for goodwill). GAAP prohibits revaluation of intangible assets.

### Looking to the Future

The IASB and FASB have identified a project that would consider expanded recognition of internally generated intangible assets. IFRS permits more recognition of intangibles compared to GAAP.

## IFRS Practice

### IFRS Self-Test Questions

1. Which of the following statements is **correct**?
   - **a.** Both IFRS and GAAP permit revaluation of property, plant, and equipment and intangible assets (except for goodwill).
   - **b.** IFRS permits revaluation of property, plant, and equipment and intangible assets (except for goodwill).
   - **c.** Both IFRS and GAAP permit revaluation of property, plant, and equipment but not intangible assets.
   - **d.** GAAP permits revaluation of property, plant, and equipment but not intangible assets.

2. Research and development costs are:
   - **a.** expensed under GAAP.
   - **b.** expensed under IFRS.
   - **c.** expensed under both GAAP and IFRS.
   - **d.** None of the above.

### IFRS Exercises

**IFRS10.1** What is component depreciation, and when must it be used?

**IFRS10.2** What is revaluation of plant assets? When should revaluation be applied?

**IFRS10.3** Some product development expenditures are recorded as development expenses and others as development costs. Explain the difference between these accounts and how a company decides which classification is appropriate.

### International Financial Statement Analysis: Louis Vuitton

**IFRS10.4** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

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### Instructions

Use the company's annual report to answer the following questions.

**a.** According to the notes to the financial statements, what method or methods does the company use to depreciate "property, plant, and equipment?" What useful lives does it use to depreciate property, plant, and equipment?

**b.** Using the notes to the financial statements, explain how the company accounted for its intangible assets with indefinite lives.

**c.** Using the notes to the financial statements, determine (1) the balance in Accumulated Amortization and Impairment for intangible assets (other than goodwill), and (2) the balance in Depreciation (and impairment) for property, plant, and equipment.

### Answers to IFRS Self-Test Questions

**1.** b **2.** a

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# Current Liabilities and Payroll Accounting

## Chapter Preview

Inventor-entrepreneur Wilbert Murdock, as the following Feature Story notes, had to use multiple credit cards to finance his business ventures. Murdock's credit card debts would be classified as **current liabilities** because they are due every month. Yet, by making minimal payments and paying high interest each month, Murdock used this credit source long-term. Some credit card balances remain outstanding for years as they accumulate interest.

## Feature Story

### Financing His Dreams

What would you do if you had a great idea for a new product but couldn't come up with the cash to get the business off the ground? Small businesses often cannot attract investors. Nor can they obtain traditional debt financing through bank loans or bond issuances. Instead, they often resort to unusual, and costly, forms of nontraditional financing.

Such was the case for Wilbert Murdock. Murdock grew up in a New York housing project and always had great ambitions. His entrepreneurial spirit led him into some business ventures that failed: a medical diagnostic tool, a device to eliminate carpal tunnel syndrome, custom-designed sneakers, and a device to keep people from falling asleep while driving.

Another idea was computerized golf clubs that analyze a golfer's swing and provide immediate feedback. Murdock saw great potential in the idea. Many golfers are willing to shell out considerable sums of money for devices that might improve

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their game. But Murdock had no cash to develop his product, and banks and other lenders had shied away. Rather than give up, Murdock resorted to credit cards—in a big way. He quickly owed $25,000 to credit card companies.

While funding a business with credit cards might sound unusual, it isn't. A recent study found that one-third of businesses with fewer than 20 employees financed at least part of their operations with credit cards. As Murdock explained, credit cards are an appealing way to finance a start-up because "credit-card companies don't care how the money is spent." However, they do care how they are paid. And so Murdock faced high interest charges and a barrage of credit card collection letters.

Murdock's debt forced him to sacrifice nearly everything in order to keep his business afloat. His car stopped running, he barely had enough money to buy food, and he lived and worked out of a dimly lit apartment in his mother's basement. Through it all he tried to maintain a positive spirit, joking that, if he becomes successful, he might some day get to appear in an **American Express** commercial.

**Source:** Rodney Ho, "Banking on Plastic: To Finance a Dream, Many Entrepreneurs Binge on Credit Cards," *Wall Street Journal* (March 9, 1998), p. A1.

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Explain how to account for current liabilities. | • What is a current liability?<br>• Notes payable<br>• Sales taxes payable<br>• Unearned revenues<br>• Current maturities of long-term debt | **DO IT! 1** Current Liabilities |
| **LO 2** Discuss how current liabilities are reported and analyzed. | • Reporting uncertainty<br>• Reporting of current liabilities<br>• Analysis of current liabilities | **DO IT! 2** Reporting and Analyzing |
| **LO 3** Explain how to account for payroll. | • Determining the payroll<br>• Recording the payroll<br>• Employer payroll taxes<br>• Filing and remitting payroll taxes<br>• Internal control for payroll | **DO IT! 3a** Payroll<br>**3b** Employer's Payroll Taxes |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
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# Accounting for Current Liabilities

**LEARNING OBJECTIVE 1**

Explain how to account for current liabilities.

## What Is a Current Liability?

You have learned that liabilities are defined as "creditors' claims on total assets" and as "existing debts and obligations." Companies must settle or pay these claims, debts, and obligations at some time in the future by transferring assets or services. The future date on which they are due or payable (the maturity date) is a significant feature of liabilities.

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As explained in Chapter 4, a **current liability** is a debt that a company expects to pay within one year or the operating cycle, whichever is longer. Debts that do not meet this criterion are **long-term liabilities.**

Financial statement users want to know whether a company's obligations are current or long-term. A company that has more current liabilities than current assets often lacks liquidity, or short-term debt-paying ability. In addition, users want to know the types of liabilities a company has. If a company declares bankruptcy, a specific, predetermined order of payment to creditors exists. Thus, the amount and type of liabilities are of critical importance.

The different types of current liabilities include notes payable, accounts payable, unearned revenues, and accrued liabilities such as taxes, salaries and wages, and interest payable (see **Helpful Hint**). In the sections that follow, we discuss common types of current liabilities.

**HELPFUL HINT**

**In previous chapters, we explained the entries for accounts payable and the adjusting entries for some current liabilities.**

## Notes Payable

Companies record obligations in the form of written notes as **notes payable**. Notes payable are often used instead of accounts payable because they give the lender formal proof of the obligation in case legal remedies are needed to collect the debt. Companies frequently issue notes payable to meet short-term financing needs. Notes payable usually require the borrower to pay interest.

Notes are issued for varying periods of time. **Those due for payment within one year of the balance sheet date are usually classified as current liabilities.**

To illustrate the accounting for notes payable, assume that First National Bank agrees to lend $100,000 on September 1, 2020, if Cole Williams Co. signs a $100,000, 12%, four-month note maturing on January 1. When a company issues an interest-bearing note, the amount of assets it receives upon issuance of the note generally equals the note's face value. Cole Williams therefore will receive $100,000 cash and will make the following journal entry.

| | | | |
|---|---|---|---|
| Sept. 1 | Cash | 100,000 | |
| | Notes Payable | | 100,000 |
| | (To record issuance of 12%, 4-month note to First National Bank) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +100,000 | | | | |
| | | +100,000 | | |

**Cash Flows**
+100,000

Interest accrues over the life of the note, and the company must periodically record that accrual. If Cole Williams prepares financial statements annually, it makes an adjusting entry at December 31 to recognize interest expense and interest payable of $4,000 ($100,000 × 12% × 4/12). **Illustration 11.1** shows the formula for computing interest and its application to Cole Williams' note.

**ILLUSTRATION 11.1**
**Formula for computing interest**

| Face Value of Note | × | Annual Interest Rate | × | Time in Terms of One Year | = | Interest |
|---|---|---|---|---|---|---|
| $100,000 | × | 12% | × | 4/12 | = | $4,000 |

Cole Williams makes an adjusting entry as follows.

| | | | |
|---|---|---|---|
| Dec. 31 | Interest Expense | 4,000 | |
| | Interest Payable | | 4,000 |
| | (To accrue interest for 4 months on First National Bank note) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | −4,000 Exp |
| | | +4,000 | | |

**Cash Flows**
no effect

In the December 31 financial statements, the current liabilities section of the balance sheet will show notes payable $100,000 and interest payable $4,000. In addition, the company will report interest expense of $4,000 under "Other expenses and losses" in the income statement. If Cole Williams prepared financial statements monthly, the adjusting entry at the end of each month would be $1,000 ($100,000 × 12% × 1/12).

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At maturity (January 1, 2021), Cole Williams must pay the face value of the note ($100,000) plus $4,000 interest ($100,000 × 12% × 4/12). It records payment of the note and accrued interest as follows.

| | | | |
|---|---|---|---|
| Jan. 1 | Notes Payable | 100,000 | |
| | Interest Payable | 4,000 | |
| | Cash | | 104,000 |
| | (To record payment of First National Bank interest-bearing note and accrued interest at maturity) | | |

A = L + OE
−100,000
−4,000
−104,000

**Cash Flows**
−104,000

## Sales Taxes Payable

Many of the products we purchase at retail stores are subject to sales taxes. Many states also are now collecting sales taxes on purchases made on the Internet as well. Sales taxes are expressed as a percentage of the sales price. The selling company collects the tax from the customer when the sale occurs. Periodically (usually monthly), the retailer remits the collections to the state's department of revenue. Collecting sales taxes is important. For example, the State of New York recently sued **Sprint Corporation** for $300 million for its alleged failure to collect sales taxes on phone calls.

Under most state sales tax laws, the selling company must enter separately in the cash register the amount of the sale and the amount of the sales tax collected. (Gasoline sales are a major exception.) The company then uses the cash register readings to credit Sales Revenue and Sales Taxes Payable. For example, if the March 25 cash register reading for Cooley Grocery shows sales of $10,000 and sales taxes of $600 (sales tax rate of 6%), the journal entry is as follows.

| | | | |
|---|---|---|---|
| Mar. 25 | Cash | 10,600 | |
| | Sales Revenue | | 10,000 |
| | Sales Taxes Payable | | 600 |
| | (To record daily sales and sales taxes) | | |

A = L + OE
+10,600
+10,000 Rev
+600

**Cash Flows**
+10,600

When the company remits the taxes to the taxing agency, it debits Sales Taxes Payable and credits Cash. The company does not report sales taxes as an expense. It simply forwards to the government the amount paid by the customers. Thus, Cooley Grocery serves only as a **collection agent** for the taxing authority.

Sometimes companies do not enter sales taxes separately in the cash register. To determine the amount of sales in such cases, divide total receipts by 100% plus the sales tax percentage. For example, assume that Cooley Grocery enters total receipts of $10,600. The receipts from the sales are equal to the sales price (100%) plus the tax percentage (6% of sales), or 1.06 times the sales total. We can compute the sales amount as follows.

$$\$10{,}600 \div 1.06 = \$10{,}000$$

Thus, we can find the sales tax amount of $600 by either (1) subtracting sales from total receipts ($10,600 − $10,000) or (2) multiplying sales by the sales tax rate ($10,000 × 6%).

## Unearned Revenues

A magazine publisher, such as **Sports Illustrated**, receives customers' checks when they order magazines. An airline company, such as **American Airlines**, often receives cash when it sells tickets for future flights. Season tickets for concerts, sporting events, and theater programs are also paid for in advance. How do companies account for unearned revenues that are received before goods are delivered or services are performed?

1. When a company receives the advance payment, it debits Cash and credits a current liability account identifying the source of the unearned revenue.
2. When the company recognizes revenue, it debits an unearned revenue account and credits a revenue account.

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To illustrate, assume that Superior University sells 10,000 season football tickets at $50 each for its five-game home schedule. The university makes the following entry for the sale of season tickets.

| | | | |
|---|---|---|---|
| Aug. 6 | Cash (10,000 × $50) | 500,000 | |
| | Unearned Ticket Revenue | | 500,000 |
| | (To record sale of 10,000 season tickets) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +500,000 | | | | |
| | | +500,000 | | |

**Cash Flows**
+500,000

As each game is completed, Superior records the recognition of revenue with the following entry.

| | | | |
|---|---|---|---|
| Sept. 7 | Unearned Ticket Revenue | 100,000 | |
| | Ticket Revenue ($500,000 ÷ 5) | | 100,000 |
| | (To record football ticket revenue) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | −100,000 | | |
| | | | | +100,000 Rev |

**Cash Flows**
no effect

The account Unearned Ticket Revenue represents unearned revenue, and Superior reports it as a current liability. As the school recognizes revenue, it reclassifies the amount from unearned revenue to Ticket Revenue. Unearned revenue is material for some companies. In the airline industry, for example, tickets sold for future flights represent almost 50% of total current liabilities. At **United Air Lines**, unearned ticket revenue is its largest current liability, recently amounting to over $1 billion.

**Illustration 11.2** shows specific unearned revenue and revenue accounts used in selected types of businesses.

**ILLUSTRATION 11.2**
**Unearned revenue and revenue accounts**

| Type of Business | Account Title | |
|---|---|---|
| | Unearned Revenue | Revenue |
| Airline | Unearned Ticket Revenue | Ticket Revenue |
| Magazine publisher | Unearned Subscription Revenue | Subscription Revenue |
| Hotel | Unearned Rent Revenue | Rent Revenue |

## Current Maturities of Long-Term Debt

Companies often have a portion of long-term debt that comes due in the current year. That amount is considered a current liability. As an example, assume that Wendy Construction issues a five-year, interest-bearing $25,000 note on January 1, 2019. This note specifies that each January 1, starting January 1, 2020, Wendy should pay $5,000 of the note. When the company prepares financial statements on December 31, 2019, it should report $5,000 as a current liability and $20,000 as a long-term liability. (The $5,000 amount is the portion of the note that is due to be paid within the next 12 months.) Companies often identify current maturities of long-term debt on the balance sheet as **long-term debt due within one year**. In a recent year, **General Motors** had $724 million of such debt.

It is not necessary to prepare an adjusting entry to recognize the current maturity of long-term debt. At the balance sheet date, all obligations due within one year are classified as current, and all other obligations as long-term.

### DO IT! 1 | Current Liabilities

You and several classmates are studying for the next accounting exam. They ask you to answer the following questions.

1. If cash is borrowed on a $50,000, 6-month, 12% note on September 1, how much interest expense would be incurred by December 31?
2. How is the sales tax amount determined when the cash register total includes sales taxes?
3. If $15,000 is collected in advance on November 1 for 3 months' rent, what amount of rent revenue should be recognized by December 31?

**ACTION PLAN**

- Use the interest formula: Face value of note × Annual interest rate × Time in terms of one year.
- Divide total receipts by 100% plus the tax rate to determine sales revenue, then subtract sales revenue from the total receipts.

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**Solution**

1. $50,000 × 12% × 4/12 = $2,000
2. First, divide the total cash register receipts by 100% plus the sales tax percentage to find the sales revenue amount. Second, subtract the sales revenue amount from the total cash register receipts to determine the sales taxes.
3. $15,000 × 2/3 = $10,000

**ACTION PLAN (CONT.)**

- Determine what fraction of the total unearned rent should be recognized this year.

Related exercise material: **BE11.1, BE11.2, BE11.3, BE11.4, DO IT! 11.1, E11.1, E11.2, E11.3, and E11.4.**

# Reporting and Analyzing Current Liabilities

**LEARNING OBJECTIVE 2**

Discuss how current liabilities are reported and analyzed.

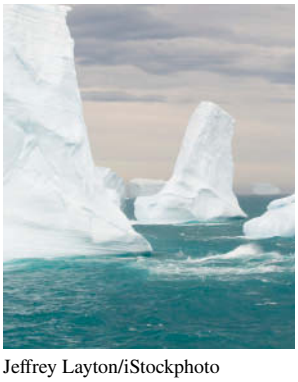
## Reporting Uncertainty

With notes payable, interest payable, accounts payable, and sales taxes payable, we know that an obligation to make a payment exists. But, suppose that your company is involved in a dispute with the Internal Revenue Service (IRS) over the amount of its income tax liability. Should you report the disputed amount as a liability on the balance sheet? Or, suppose your company is involved in a lawsuit which, if you lose, might result in bankruptcy. How should you report this major contingency? The answers to these questions are difficult because these liabilities are dependent—contingent—upon some future event. In other words, a **contingent liability** is a potential liability that may become an actual liability in the future.

How should companies report contingent liabilities? They use the following guidelines:

1. If the contingency is **probable** (if it is *likely* to occur) **and** the amount can be **reasonably estimated**, the liability should be recorded in the accounts.
2. If the contingency is only **reasonably possible** (if it *could* happen), then it needs to be disclosed only in the notes that accompany the financial statements.
3. If the contingency is **remote** (if it is *unlikely* to occur), it need not be recorded or disclosed.

### Accounting Across the Organization Manville Corp.



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#### Contingencies: How Big Are They?

Contingent liabilities abound in the real world. Consider **Manville Corp.**, which filed for bankruptcy when it was hit by billions of dollars in asbestos product-liability claims. Companies having multiple toxic waste sites are faced with cleanup costs that average $10 to $30 million and can reach as high as $500 million depending on the type of waste. For life and health insurance companies and their stockholders, the cost of diseases such as diabetes, Alzheimer's, and AIDS is like an iceberg: Everyone wonders how big such costs really are and what damage they might do in the future. And frequent-flyer programs are so popular that airlines at one time owed participants more than 3 million round-trip domestic tickets. That's enough to fly at least 5.4 billion miles—free for the passengers, but at what future cost to the airlines?

**Why do you think most companies disclose, but do not record, contingent liabilities? (Go to WileyPLUS for this answer and additional questions.)**

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## Reporting a Contingent Liability

Product warranties are an example of a contingent liability that companies should record in the accounts. Warranty contracts result in future costs that companies may incur in replacing defective units or repairing malfunctioning units. Generally, a manufacturer, such as **Stanley Black & Decker**, knows that it will incur some warranty costs. From prior experience with the product, the company usually can reasonably estimate the anticipated cost of servicing (honoring) the warranty.

The accounting for warranty costs is based on the expense recognition principle. **The estimated cost of honoring product warranty contracts should be recognized as an expense in the period in which the sale occurs.** To illustrate, assume that in 2020 Denson Manufacturing Company sells 10,000 washers and dryers at an average price of $600 each. The selling price includes a one-year warranty on parts. Denson expects that 500 units (5%) will be defective and that warranty repair costs will average $80 per unit. In 2020, the company honors warranty contracts on 300 units, at a total cost of $24,000.

Denson records those repair costs incurred in 2020 to honor warranty contracts on 2020 sales as shown below.

| | | | |
|---|---|---|---|
| Jan. 1–Dec. 31 | Warranty Expense | 24,000 | |
| | Repair Parts | | 24,000 |
| | (To record honoring of 300 warranty contracts on 2020 sales) | | |

A = L + OE
–24,000
–24,000
**Cash Flows**
no effect

At December 31, to accrue the estimated warranty costs on the 2020 sales, less the amount already honored in 2020 of $24,000, Denson computes the warranty liability as shown in **Illustration 11.3**.

**ILLUSTRATION 11.3**
**Computation of estimated warranty liability**

| | |
|---|---|
| Number of units sold | 10,000 |
| Estimated rate of defective units | × 5% |
| Total estimated defective units | 500 |
| Average warranty repair cost | × $80 |
| | $40,000 |
| Less: Warranty claims honored | 24,000 |
| **Warranty liability at December 31, 2020** | **$16,000** |

The company makes the following adjusting entry for $16,000 after it adjusts for $24,000 of warranty claims honored during 2020.

| | | | |
|---|---|---|---|
| Dec. 31 | Warranty Expense | 16,000 | |
| | Warranty Liability | | 16,000 |
| | (To accrue estimated warranty costs) | | |

A = L + OE
–16,000 Exp
+16,000
**Cash Flows**
no effect

The company reports warranty expense of $40,000 under selling expenses in the income statement. It classifies warranty liability of $16,000 ($40,000 − $24,000) as a current liability on the balance sheet, assuming the warranty is estimated to be honored in the next year.

In the following year, Denson should debit to Warranty Liability all expenses incurred in honoring warranty contracts on 2020 sales. To illustrate, assume that the company replaces 20 defective units in January 2021, at an average cost of $80 in parts and labor. The summary entry for the month of January 2021 is as follows.

| | | | |
|---|---|---|---|
| Jan. 31 | Warranty Liability | 1,600 | |
| | Repair Parts | | 1,600 |
| | (To record honoring of 20 warranty contracts on 2020 sales) | | |

A = L + OE
–1,600
–1,600
**Cash Flows**
no effect

# Reporting of Current Liabilities

Current liabilities are the first category under liabilities on the balance sheet. Companies list each of the principal types of current liabilities separately within the category. In addition, companies disclose the terms of notes payable and other key information about the individual items in the notes to the financial statements.

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Companies seldom list current liabilities in the order of liquidity. The reason is that varying maturity dates may exist for specific obligations such as notes payable. Or, as a matter of custom, many companies show notes payable first and then accounts payable, regardless of amount. Then, the remaining current liabilities are listed by magnitude. *(Use this approach in your homework.)* **Illustration 11.4** provides an excerpt from Evan Company's balance sheet, which is a common order of presentation among companies (see **Helpful Hint**).

**ILLUSTRATION 11.4**
**Balance sheet reporting of current liabilities**

**Evan Company**
**Balance Sheet**
**December 31, 2020**

| | |
|---|---|
| **Assets** | |
| Current assets | $ 500,000 |
| Property, plant and equipment (net) | 150,000 |
| Other long-term assets | 520,000 |
| Total assets | $1,170,000 |
| **Liabilities and Owner's Equity** | |
| **Current liabilities** | |
| **Notes payable** | **$ 40,000** |
| **Accounts payable** | **110,000** |
| **Salaries and wages payable** | **90,000** |
| **Current maturities of long-term debt** | **65,000** |
| **Unearned revenue** | **30,000** |
| **Warranty liability** | **25,000** |
| **Total current liabilities** | **360,000** |
| Noncurrent liabilities | 620,000 |
| Total liabilities | 980,000 |
| Owner's equity | 190,000 |
| Total liabilities and owner's equity | $1,170,000 |

**HELPFUL HINT**
For examples of real-world current liabilities sections, refer to the PepsiCo and Coca-Cola balance sheets in Appendices B and C.

## Analysis of Current Liabilities

Use of current and noncurrent classifications makes it possible to analyze a company's liquidity. **Liquidity** refers to the ability to pay maturing obligations and meet unexpected needs for cash. The relationship of current assets to current liabilities is critical in analyzing liquidity. We can express this relationship as a dollar amount (working capital) and as a ratio (the current ratio).

The excess of current assets over current liabilities is **working capital**. **Illustration 11.5** shows the formula for the computation of Evan Company's working capital.

**ILLUSTRATION 11.5**
**Working capital formula and computation**

| Current Assets | – | Current Liabilities | = | Working Capital |
|---|---|---|---|---|
| $500,000 | – | $360,000 | = | $140,000 |

As an absolute dollar amount, working capital offers limited informational value. For example, $1 million of working capital may be more than needed for a small company but inadequate for a large corporation. Also, $1 million of working capital may be adequate for a company at one time but inadequate at another time.

The **current ratio** permits us to compare the liquidity of different-sized companies and of a single company at different times. The current ratio is calculated as current assets divided by current liabilities. **Illustration 11.6** shows the formula for this ratio, along with its computation using Evan's current asset and current liability data.

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| Current Assets | ÷ | Current Liabilities | = | Current Ratio |
|---|---|---|---|---|
| $500,000 | ÷ | $360,000 | = | 1.39:1 |

**ILLUSTRATION 11.6**
**Current ratio formula and computation**

Historically, companies and analysts considered a current ratio of 2:1 to be the standard for a good credit rating. In recent years, however, many healthy companies have maintained ratios well below 2:1 by improving management of their current assets and liabilities. Evan's ratio of 1.39:1 is adequate but certainly below the standard of 2:1.

## DO IT! 2 | Reporting and Analyzing

Lepid Company has the following account balances at December 31, 2020.

| | |
|---|---|
| Notes payable ($80,000 due after 12/31/21) | $200,000 |
| Unearned service revenue | 75,000 |
| Other long-term debt ($30,000 due in 2021) | 150,000 |
| Salaries and wages payable | 22,000 |
| Other accrued expenses | 15,000 |
| Accounts payable | 100,000 |

In addition, Lepid is involved in a lawsuit. Legal counsel feels it is probable Lepid will pay damages of $38,000 in 2021.

**a.** Prepare the current liabilities section of Lepid's December 31, 2020, balance sheet.

**b.** Lepid's current assets are $504,000. Compute Lepid's working capital and current ratio.

**ACTION PLAN**

- Determine which liabilities will be paid within one year or the operating cycle and include those as current liabilities.
- If the contingent liability is probable and reasonably estimable, include it as a current liability.
- Use the formula for working capital: Current assets − Current liabilities.
- Use the formula for the current ratio: Current assets ÷ Current liabilities.

### Solution

**a.** Current liabilities

| | |
|---|---|
| Notes payable ($200,000 − $80,000) | $120,000 |
| Accounts payable | 100,000 |
| Unearned service revenue | 75,000 |
| Lawsuit liability | 38,000 |
| Long-term debt due within one year | 30,000 |
| Salaries and wages payable | 22,000 |
| Other accrued expenses | 15,000 |
| Total current liabilities | $400,000 |

**b.** Working capital = Current assets − Current liabilities = $504,000 − $400,000 = $104,000
Current ratio = Current assets ÷ Current liabilities = $504,000 ÷ $400,000 = 1.26:1

Related exercise material: **BE11.5, DO IT! 11.2, E11.7, and E11.8.**

# Accounting for Payroll

**LEARNING OBJECTIVE 3**
Explain how to account for payroll.

Payroll and related fringe benefits often make up a large percentage of current liabilities. Employee compensation is often the most significant expense that a company incurs.

Payroll accounting involves more than paying employees' wages. Companies are required by law to maintain payroll records for each employee, to file and pay payroll taxes, and to comply with state and federal tax laws related to employee compensation.

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The term "payroll" **pertains to both salaries and wages of employees**. Managerial, administrative, and sales personnel are generally paid **salaries**. Salaries are often expressed in terms of a specified amount per month or per year rather than an hourly rate. Store clerks, factory employees, and manual laborers are normally paid **wages**. Wages are based on a rate per hour or on a piecework basis (such as per unit of product). Frequently, people use the terms "salaries" and "wages" interchangeably.

The term "payroll" **does not apply to payments made for services of professionals** such as certified public accountants, attorneys, and architects. Such professionals are independent contractors rather than salaried employees. Payments to them are called **fees**. This distinction is important because government regulations relating to the payment and reporting of payroll taxes apply only to employees.

# Determining the Payroll

Determining the payroll involves computing three amounts: (1) gross earnings, (2) payroll deductions, and (3) net pay.

## Gross Earnings

**Gross earnings** is the total compensation earned by an employee. It consists of wages or salaries, plus any bonuses and commissions.

Companies determine total **wages** for an employee by multiplying the hours worked by the hourly rate of pay. In addition to the hourly pay rate, most companies are required by law to pay hourly workers a minimum of 1½ times the regular hourly rate for overtime work in excess of eight hours per day or 40 hours per week. In addition, many employers pay overtime rates for work done at night, on weekends, and on holidays.

For example, assume that Michael Jordan, an employee of Academy Company, worked 44 hours for the weekly pay period ending January 14. His regular wage is $12 per hour. For any hours in excess of 40, the company pays at one-and-a-half times the regular rate. Academy computes Jordan's gross earnings (total wages) as shown in **Illustration 11.7**.

**ILLUSTRATION 11.7**
**Computation of total wages**

| Type of Pay | Hours | × | Rate | = | Gross Earnings |
|---|---|---|---|---|---|
| Regular | 40 | × | $12 | = | $480 |
| Overtime | 4 | × | 18 | = | 72 |
| Total wages | | | | | $552 |

This computation assumes that Jordan receives 1½ times his regular hourly rate ($12 × 1.5) for his overtime hours. Union contracts often require that overtime rates be as much as twice the regular rates.

**ETHICS NOTE**

**Bonuses often reward outstanding individual performance, but successful corporations also need considerable teamwork. A challenge is to motivate individuals while preventing an unethical employee from taking another's idea for his or her own advantage.**

An employee's **salary** is generally based on a monthly or yearly rate. The company then prorates these rates to its payroll periods (e.g., biweekly or monthly). Most executive and administrative positions are salaried. Federal law does not require overtime pay for employees in such positions.

Many companies have **bonus** agreements for employees (see **Ethics Note**). One survey found that over 94% of the largest U.S. manufacturing companies offer annual bonuses to key executives. Bonus arrangements may be based on such factors as increased sales or net income. Companies may pay bonuses in cash and/or by granting employees the opportunity to acquire shares of company stock at favorable prices (called stock option plans).

## Payroll Deductions

As anyone who has received a paycheck knows, gross earnings are usually very different from the amount actually received. The difference is due to **payroll deductions**.

Payroll deductions may be mandatory or voluntary. **Mandatory deductions are required by law and consist of FICA taxes and income taxes.** Voluntary deductions are at the option of the employee. **Illustration 11.8** summarizes common types of payroll deductions. Such deductions

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do not result in payroll tax expense to the employer. The employer is merely a collection agent, and subsequently transfers the deducted amounts to the government and designated recipients.

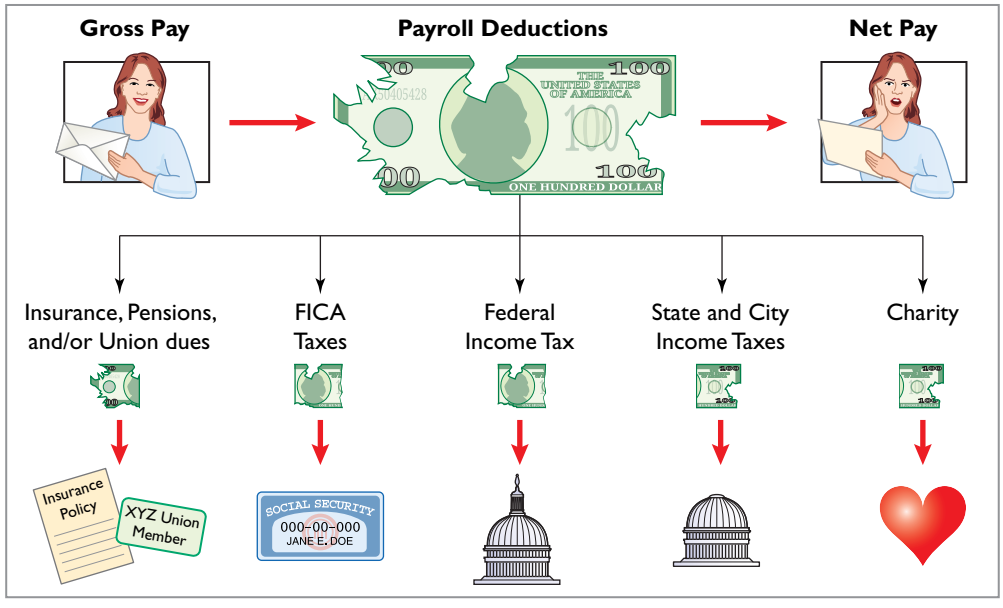


**ILLUSTRATION 11.8**
**Payroll deductions**

**FICA Taxes.** In 1937, Congress enacted the Federal Insurance Contribution Act (FICA). **FICA taxes are designed to provide workers with supplemental retirement, employment disability, and medical benefits.** In 1965, Congress extended benefits to include Medicare for individuals over 65 years of age. The benefits are financed by a tax levied on employees' earnings.

FICA taxes consist of a Social Security tax and a Medicare tax. They are paid by both employee and employer. The FICA tax rate is 7.65% (6.2% Social Security tax up to $127,200 plus 1.45% Medicare tax) of salary and wages for each employee.[1] In addition, the Medicare tax of 1.45% continues for an employee's salary and wages in excess of $127,200. These tax rate and tax base requirements are shown in **Illustration 11.9**.

**ILLUSTRATION 11.9**
**FICA tax rate and tax base**

| | |
|---|---|
| **Social Security taxes** | |
| Employee and employer | **6.2%** on salary and wages up to **$127,200** |
| **Medicare taxes** | |
| Employee and employer | **1.45%** on all salary and wages without limitation |

To illustrate the computation of FICA taxes, assume that Mario Ruez has total wages for the year of $100,000. In this case, Mario pays FICA taxes of $7,650 ($100,000 × 7.65%). If Mario has total wages of $130,000, Mario pays FICA taxes of $9,771 (rounded to nearest dollar), as shown in **Illustration 11.10**.

**ILLUSTRATION 11.10**
**FICA tax computation**

| | | |
|---|---|---|
| Social Security tax | ($127,200 × 6.2%) | $7,886 |
| Medicare tax | ($130,000 × 1.45%) | 1,885 |
| **Total FICA taxes** | | **$9,771** |

Mario's employer is also required to pay $9,771.

**Income Taxes.** Under the U.S. pay-as-you-go system of federal income taxes, employers are required to withhold income taxes from employees each pay period. Four variables determine the amount to be withheld: (1) the employee's gross earnings, (2) marital status, (3) the number

[1]The $127,200 limit is based upon recent guidelines set by the Social Security Administration.

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of allowances claimed by the employee, and (4) the length of the pay period. The number of allowances claimed typically includes the employee, his or her spouse, and other dependents.

Withholding tables furnished by the Internal Revenue Service indicate the amount of income tax to be withheld. Withholding amounts are based on gross wages and the number of allowances claimed. Separate tables are provided for weekly, biweekly, semimonthly, and monthly pay periods. **Illustration 11.11** shows the withholding tax table for Michael Jordan (assuming he earns $552 per week, is married, and claims two allowances). For a weekly salary of $552 with two allowances, the income tax to be withheld is $24 (highlighted in red).

**ILLUSTRATION 11.11**
**Withholding tax table**

**MARRIED** Persons — **WEEKLY** Payroll Period
**(For Wages Paid through December 2020)**

| If the wages are — | | And the number of withholding allowances claimed is — | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| At least | But less than | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | | The amount of income tax to be withheld is — | | | | | | | | | | |
| 500 | 510 | 34 | 27 | 19 | 11 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 510 | 520 | 35 | 28 | 20 | 12 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 520 | 530 | 37 | 29 | 21 | 13 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 530 | 540 | 38 | 30 | 22 | 14 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 540 | 550 | 40 | 31 | 23 | 15 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 550 | 560 | 41 | 32 | 24 | 16 | 9 | 1 | 0 | 0 | 0 | 0 | 0 |
| 560 | 570 | 43 | 33 | 25 | 17 | 10 | 2 | 0 | 0 | 0 | 0 | 0 |
| 570 | 580 | 44 | 34 | 26 | 18 | 11 | 3 | 0 | 0 | 0 | 0 | 0 |
| 580 | 590 | 46 | 35 | 27 | 19 | 12 | 4 | 0 | 0 | 0 | 0 | 0 |
| 590 | 600 | 47 | 36 | 28 | 20 | 13 | 5 | 0 | 0 | 0 | 0 | 0 |
| 600 | 610 | 49 | 38 | 29 | 21 | 14 | 6 | 0 | 0 | 0 | 0 | 0 |
| 610 | 620 | 50 | 39 | 30 | 22 | 15 | 7 | 0 | 0 | 0 | 0 | 0 |
| 620 | 630 | 52 | 41 | 31 | 23 | 16 | 8 | 1 | 0 | 0 | 0 | 0 |
| 630 | 640 | 53 | 42 | 32 | 24 | 17 | 9 | 2 | 0 | 0 | 0 | 0 |
| 640 | 650 | 55 | 44 | 33 | 25 | 18 | 10 | 3 | 0 | 0 | 0 | 0 |
| 650 | 660 | 56 | 45 | 34 | 26 | 19 | 11 | 4 | 0 | 0 | 0 | 0 |
| 660 | 670 | 58 | 47 | 35 | 27 | 20 | 12 | 5 | 0 | 0 | 0 | 0 |
| 670 | 680 | 59 | 48 | 37 | 28 | 21 | 13 | 6 | 0 | 0 | 0 | 0 |
| 680 | 690 | 61 | 50 | 38 | 29 | 22 | 14 | 7 | 0 | 0 | 0 | 0 |
| 690 | 700 | 62 | 51 | 40 | 30 | 23 | 15 | 8 | 0 | 0 | 0 | 0 |

In addition, most states (and some cities) require **employers** to withhold income taxes from employees' earnings. As a rule, the amounts withheld are a percentage (specified in the state revenue code) of the amount withheld for the federal income tax. Or they may be a specified percentage of the employee's earnings. For the sake of simplicity, we have assumed that Jordan's wages are subject to state income taxes of 2%, or $11.04 (2% × $552) per week.

There is no limit on the amount of gross earnings subject to income tax withholdings. In fact, under our progressive system of taxation, the higher the earnings, the higher the percentage of income withheld for taxes.

**Other Deductions.** Employees may voluntarily authorize withholdings for charitable organizations, retirement, and other purposes. All voluntary deductions from gross earnings should be authorized in writing by the employee. The authorization(s) may be made individually or as part of a group plan. Deductions for charitable organizations, such as the **United Fund**, or for financial arrangements, such as U.S. savings bonds and repayment of loans from company credit unions, are made individually. Deductions for union dues, health and life insurance, and pension plans are often made on a group basis. We assume that Jordan has weekly voluntary deductions of $10 for the United Fund and $5 for union dues.

**ALTERNATIVE TERMINOLOGY**
Net pay is also called *take-home pay*.

## Net Pay

Academy Company determines **net pay** by subtracting payroll deductions from gross earnings (see **Alternative Terminology**). **Illustration 11.12** shows the computation of Jordan's net pay for the pay period.

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| | | |
|---|---|---|
| Gross earnings | | $552.00 |
| Payroll deductions: | | |
| FICA taxes | $42.23 | |
| Federal income taxes | 24.00 | |
| State income taxes | 11.04 | |
| United Fund | 10.00 | |
| Union dues | 5.00 | 92.27 |
| **Net pay** | | **$459.73** |

**ILLUSTRATION 11.12** **Computation of net pay**

Assuming that Michael Jordan's wages for each week during the year are $552, total wages for the year are $28,704 (52 × $552). Thus, all of Jordan's wages are subject to FICA tax during the year. In comparison, let's assume that Jordan's department head earns $3,000 per week, or $156,000 for the year. Since only the first $127,200 is subject to Social Security taxes, the maximum FICA withholdings on the department head's earnings would be $10,148 [($127,200 × 6.2%) + ($156,000 × 1.45%)].

# Recording the Payroll

Recording the payroll involves maintaining payroll department records, recognizing payroll expenses and liabilities, and recording payment of the payroll.

## Maintaining Payroll Department Records

To comply with state and federal laws, an employer must keep a cumulative record of each employee's gross earnings, deductions, and net pay during the year. The record that provides this information is the **employee earnings record**. **Illustration 11.13** shows Michael Jordan's employee earnings record.

**ILLUSTRATION 11.13** **Employee earnings record**

Academy Company

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

**Academy Company**
**Employee Earnings Record**
**For the Year 2020**

| | | | | |
|---|---|---|---|---|
| **Name** | Michael Jordan | **Address** | 2345 Mifflin Ave. | |
| **Social Security Number** | 329-35-9547 | | Hampton, Michigan 48292 | |
| **Date of Birth** | December 24, 1994 | **Telephone** | 555-238-9051 | |
| **Date Employed** | September 1, 2018 | **Date Employment Ended** | | |
| **Sex** | Male | **Exemptions** | 2 | |
| **Single** | | **Married** x | | |

| 2020 Period Ending | Total Hours | Gross Earnings | | | | Deductions | | | | | | Payment | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Regular | Overtime | Total | Cumulative | FICA | Fed. Inc. Tax | State Inc. Tax | United Fund | Union Dues | Total | Net Amount | Check No. |
| 1/7 | 42 | 480.00 | 36.00 | 516.00 | 516.00 | 39.47 | 20.00 | 10.32 | 10.00 | 5.00 | 84.79 | 431.21 | 974 |
| 1/14 | 44 | 480.00 | 72.00 | 552.00 | 1,068.00 | 42.23 | 24.00 | 11.04 | 10.00 | 5.00 | 92.27 | 459.73 | 1028 |
| 1/21 | 43 | 480.00 | 54.00 | 534.00 | 1,602.00 | 40.85 | 22.00 | 10.68 | 10.00 | 5.00 | 88.53 | 445.47 | 1077 |
| 1/28 | 42 | 480.00 | 36.00 | 516.00 | 2,118.00 | 39.47 | 20.00 | 10.32 | 10.00 | 5.00 | 84.79 | 431.21 | 1133 |
| Jan. Total | | 1,920.00 | 198.00 | 2,118.00 | | 162.02 | 86.00 | 42.36 | 40.00 | 20.00 | 350.38 | 1,767.62 | |

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Companies keep a separate earnings record for each employee and update these records after each pay period. The employer uses the cumulative payroll data on the earnings record to (1) determine when an employee has earned the maximum earnings subject to FICA taxes, (2) file state and federal payroll tax returns (as explained later), and (3) provide each employee with a statement of gross earnings and tax withholdings for the year. Illustration 11.17 shows this statement.

In addition to employee earnings records, many companies find it useful to prepare a **payroll register**. This record accumulates the gross earnings, deductions, and net pay by employee for each pay period. **Illustration 11.14** presents Academy Company's payroll register. It provides the documentation for preparing a paycheck for each employee. For example, it shows the data for Michael Jordan in the wages section. In this example, Academy's total weekly payroll is $17,210, as shown in the salaries and wages expense column (column N, row 31).

**ILLUSTRATION 11.14** **Payroll register**

Academy Company

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

**Academy Company**
**Payroll Register**
**For the Week Ending January 14, 2020**

| | | | Earnings | | | Deductions | | | | | | Paid | | Account Debited |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Employee | Total Hours | Regular | Over-time | Gross | FICA | Federal Income Tax | State Income Tax | United Fund | Union Dues | Total | Net Pay | Check No. | Salaries and Wages Expense |
| Arnold, Patricia | 40 | 580.00 | | 580.00 | 44.37 | 61.00 | 11.60 | 15.00 | | 131.97 | 448.03 | 998 | 580.00 |
| Canton, Matthew | 40 | 590.00 | | 590.00 | 45.14 | 63.00 | 11.80 | 20.00 | | 139.94 | 450.06 | 999 | 590.00 |
| Mueller, William | 40 | 530.00 | | 530.00 | 40.55 | 54.00 | 10.60 | 11.00 | | 116.15 | 413.85 | 1000 | 530.00 |
| Bennett, Robin | 42 | 480.00 | 36.00 | 516.00 | 39.47 | 35.00 | 10.32 | 18.00 | 5.00 | 107.79 | 408.21 | 1025 | 516.00 |
| Jordan, Michael | 44 | 480.00 | 72.00 | 552.00 | 42.23 | 24.00 | 11.04 | 10.00 | 5.00 | 92.27 | 459.73 | 1028 | 552.00 |
| Milroy, Lee | 43 | 480.00 | 54.00 | 534.00 | 40.85 | 46.00 | 10.68 | 10.00 | 5.00 | 112.53 | 421.47 | 1029 | 534.00 |
| Total | | 16,200.00 | 1,010.00 | 17,210.00 | 1,316.57 | 3,490.00 | 344.20 | 421.50 | 115.00 | 5,687.27 | 11,522.73 | | 17,210.00 |

Note that this record is a listing of each employee's payroll data for the pay period. In some companies, a payroll register is a journal or book of original entry. Postings are made from it directly to ledger accounts. In other companies, the payroll register is a memorandum record that provides the data for a general journal entry and subsequent posting to the ledger accounts. Academy follows the latter procedure.

## Recognizing Payroll Expenses and Liabilities

From the payroll register in Illustration 11.14, Academy Company makes a journal entry to record the payroll. For the week ending January 14, the entry is as follows.

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | −17,210.00 Exp |
| | | +1,316.57 | | |
| | | +3,490.00 | | |
| | | +344.20 | | |
| | | +421.50 | | |
| | | +115.00 | | |
| | | +11,522.73 | | |

**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| Jan. 14 | Salaries and Wages Expense | 17,210.00 | |
| | FICA Taxes Payable | | 1,316.57 |
| | Federal Income Taxes Payable | | 3,490.00 |
| | State Income Taxes Payable | | 344.20 |
| | United Fund Payable | | 421.50 |
| | Union Dues Payable | | 115.00 |
| | Salaries and Wages Payable | | 11,522.73 |
| | (To record payroll for the week ending January 14) | | |

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The company credits specific liability accounts for the mandatory and voluntary deductions made during the pay period. In the example, Academy debits Salaries and Wages Expense for the gross earnings of its employees. The amount credited to Salaries and Wages Payable is the sum of the individual checks the employees will receive.

## Recording Payment of the Payroll

A company makes payments by check (or electronic funds transfer) either from its regular bank account or a payroll bank account. Each paycheck is usually accompanied by a detachable **statement of earnings** document. This shows the employee's gross earnings, payroll deductions, and net pay, both for the period and for the year-to-date. Academy Company uses its regular bank account for payroll checks. **Illustration 11.15** shows the paycheck and statement of earnings for Michael Jordan (see **Helpful Hint**).

AC

ACADEMY COMPANY
19 Center St.
Hampton, MI 48291

No. 1028

January 14, 2020 62—1113 / 610

Pay to the order of Michael Jordan $ 459.73

Four Hundred Fifty-nine and 73/100 Dollars

City Bank & Trust
P.O. Box 3000
Hampton, MI 48291

For Payroll Randall E. Barnes

⑆032447⑆ 1028

DETACH AND RETAIN THIS PORTION FOR YOUR RECORDS

| NAME | | | | SOC. SEC. NO. | | EMPL. NUMBER | | NO. EXEMP | PAY PERIOD ENDING |
|---|---|---|---|---|---|---|---|---|---|
| Michael Jordan | | | | 329-35-9547 | | | | 2 | 1/14/20 |
| REG. HRS. | O.T. HRS. | OTH. HRS. (1) | OTH. HRS. (2) | REG. EARNINGS | O.T. EARNINGS | OTH. EARNINGS (1) | OTH. EARNINGS (2) | | GROSS |
| 40 | 4 | | | 480.00 | 72.00 | | | | $552.00 |
| FED. W/H TAX | FICA | STATE TAX | LOCAL TAX | OTHER DEDUCTIONS | | | | | NET PAY |
| 24.00 | 42.23 | 11.04 | | (1) 10.00 | (2) 5.00 | (3) | (4) | | 459.73 |

| YEAR TO DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| FED. W/H TAX | FICA | STATE TAX | LOCAL TAX | OTHER DEDUCTIONS | | | | NET PAY |
| 44.00 | 81.70 | 21.36 | | (1) 20.00 | (2) 10.00 | (3) | (4) | $890.94 |

**ILLUSTRATION 11.15**
**Paycheck and statement of earnings**

**HELPFUL HINT**
**None of the income tax liabilities result in payroll tax expense for the employer because the employer is acting only as a collection agent for the government.**

Following payment of the payroll, the company enters the check numbers in the payroll register. Academy records payment of the payroll as follows.

| | | | |
|---|---|---|---|
| Jan. 14 | Salaries and Wages Payable | 11,522.73 | |
| | Cash | | 11,522.73 |
| | (To record payment of payroll) | | |

A = L + OE
–11,522.73
–11,522.73

**Cash Flows**
–11,522.73

Many medium- and large-size companies use a payroll processing center that performs payroll recordkeeping services. Companies send the center payroll information about employee pay rates and hours worked. The center maintains the payroll records and prepares the payroll checks. In most cases, it costs less to process the payroll through the center (outsource) than if the company did so internally.

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### DO IT! 3a | Payroll

In January, gross earnings in Ramirez Company were $40,000. All earnings are subject to 7.65% FICA taxes. Federal income tax withheld was $9,000, and state income tax withheld was $1,000. (a) Calculate net pay for January, and (b) record the payroll.

**ACTION PLAN**

- Determine net pay by subtracting payroll deductions from gross earnings.
- Record gross earnings as Salaries and Wages Expense, record payroll deductions as liabilities, and record net pay as Salaries and Wages Payable.

**Solution**

**a.** Net pay: $40,000 − (7.65% × $40,000) − $9,000 − $1,000 = $26,940

**b.**

| | | |
|---|---|---|
| Salaries and Wages Expense | 40,000 | |
| FICA Taxes Payable | | 3,060 |
| Federal Income Taxes Payable | | 9,000 |
| State Income Taxes Payable | | 1,000 |
| Salaries and Wages Payable | | 26,940 |
| (To record payroll) | | |

Related exercise material: **BE11.7, BE11.8, E11.9, DO IT! 11.3a, E11.10, E11.11, and E11.12.**

## Employer Payroll Taxes

Payroll tax expense for businesses results from three taxes that governmental agencies levy **on employers**. These taxes are (1) FICA, (2) federal unemployment tax, and (3) state unemployment tax. These taxes plus such items as paid vacations and pensions (discussed in the appendix to this chapter) are collectively referred to as **fringe benefits**. As indicated earlier, the cost of fringe benefits in many companies is substantial.

### FICA Taxes

Each employee must pay FICA taxes. In addition, employers must match each employee's FICA contribution. This means the employer must remit to the federal government 12.4% of each employee's first $127,200 of taxable earnings, plus 2.9% of each employee's earnings, regardless of amount. The matching contribution results in **payroll tax expense** to the employer. The employer's tax is subject to the same rate and maximum earnings as the employee's. The company uses the same account, FICA Taxes Payable, to record both the employee's and the employer's FICA contributions. For the January 14 payroll, Academy Company's FICA tax contribution is $1,316.57 ($17,210.00 × 7.65%).

### Federal Unemployment Taxes

The Federal Unemployment Tax Act (FUTA) is another feature of the federal Social Security program. **Federal unemployment taxes** provide benefits for a limited period of time to employees who lose their jobs through no fault of their own. The FUTA tax rate is currently 6.2% of taxable wages. The taxable wage base is the first $7,000 of wages paid to each employee in a calendar year. Employers who pay the state unemployment tax on a timely basis will receive an offset credit of up to 5.4%. Therefore, the net federal tax rate is generally 0.8% (6.2% − 5.4%). This rate would equate to a maximum of $56 of federal tax per employee per year (0.8% × $7,000). State tax rates are based on state law.

The **employer** bears the entire federal unemployment tax (see **Helpful Hint**). There is no deduction or withholding from employees. Companies use the account Federal Unemployment Taxes Payable to recognize this liability. The federal unemployment tax for Academy Company for the January 14 payroll is $137.68 ($17,210.00 × 0.8%).

**HELPFUL HINT**

**Both the employer and employee pay FICA taxes. Federal unemployment taxes and (in most states) the state unemployment taxes are borne entirely by the employer.**

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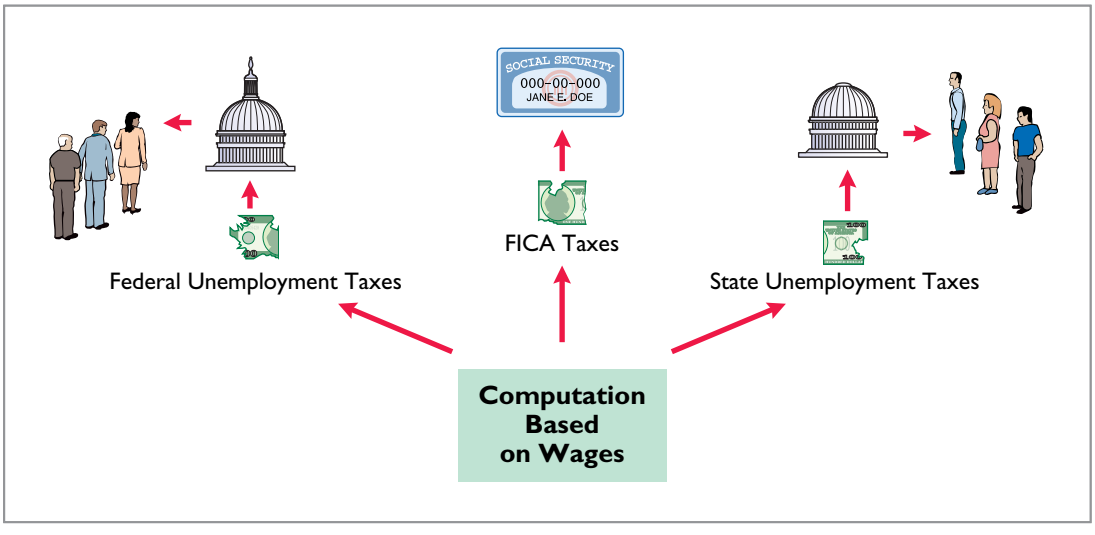
## State Unemployment Taxes

All states have unemployment compensation programs under state unemployment tax acts (SUTA). Like federal unemployment taxes, **state unemployment taxes** provide benefits to employees who lose their jobs. These taxes are levied on employers.[2] The basic rate is usually 5.4% on the first $7,000 of wages paid to an employee during the year. The state adjusts the basic rate according to the employer's experience rating. Companies with a history of stable employment may pay less than 5.4%. Companies with a history of unstable employment may pay more than the basic rate. Regardless of the rate paid, the company's credit on the federal unemployment tax is still 5.4%.

Companies use the account State Unemployment Taxes Payable for this liability. The state unemployment tax for Academy Company for the January 14 payroll is $929.34 ($17,210.00 × 5.4%). **Illustration 11.16** summarizes the types of employer payroll taxes.

**ILLUSTRATION 11.16** **Employer payroll taxes**




## Recording Employer Payroll Taxes

Companies usually record employer payroll taxes at the same time they record the payroll. The entire amount of gross pay ($17,210.00) shown in the payroll register in Illustration 11.14 is subject to each of the three taxes mentioned above. Accordingly, Academy records the payroll tax expense associated with the January 14 payroll with the following entry.

| | | | |
|---|---|---|---|
| Jan. 14 | Payroll Tax Expense | 2,383.59 | |
| | FICA Taxes Payable | | 1,316.57 |
| | Federal Unemployment Taxes Payable | | 137.68 |
| | State Unemployment Taxes Payable | | 929.34 |
| | (To record employer's payroll taxes on January 14 payroll) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | −2,383.59 Exp |
| | | | | +1,316.57 |
| | | | | +137.68 |
| | | | | +929.34 |

**Cash Flows**
no effect

Note that Academy uses separate liability accounts instead of a single credit to Payroll Taxes Payable. Why? Because these liabilities are payable to different taxing authorities at different dates. Companies classify the liability accounts in the balance sheet as current liabilities since they will be paid within the next year. They classify Payroll Tax Expense on the income statement as an operating expense.

[2]In a few states, the employee is also required to make a contribution. *In this text, including the homework, we will assume that the tax is only on the employer.*

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## Accounting Across the Organization Bogan Communications

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### It Costs $74,000 to Put $44,000 in Sally's Pocket

Sally works for **Bogan Communications**, a small company in New Jersey that provides audio systems. She makes $59,000 a year but only nets $44,000. What happened to the other $15,000? Well, $2,376 goes for Sally's share of the medical and dental insurance that Bogan provides, $126 for state unemployment insurance, $149 for disability insurance, and $856 for Medicare. New Jersey takes $1,893 in income taxes, and the federal government gets $3,658 for Social Security and another $6,250 for income tax withholding. All of this adds up to some 22% of Sally's gross pay going to Washington or Trenton.

Employing Sally costs Bogan plenty too. Bogan has to write checks for $74,000 so Sally can receive her $59,000 in base pay. Health insurance is the biggest cost. While Sally pays nearly $2,400 for coverage, Bogan pays the rest—$9,561. Then, the federal and state governments take $56 for federal unemployment coverage, $149 for disability insurance, $300 for workers' comp, and $505 for state unemployment insurance. Finally, the government requires Bogan to pay $856 for Sally's Medicare and $3,658 for her Social Security.

When you add it all up, it costs $74,000 to put $44,000 in Sally's pocket and to give her $12,000 in benefits.

**Source:** Michael P. Fleischer, "Why I'm Not Hiring," *Wall Street Journal* (August 9, 2010), p. A17.

**How are the Social Security and Medicare taxes computed for Sally's salary? (Go to WileyPLUS for this answer and additional questions.)**

# Filing and Remitting Payroll Taxes

Preparation of payroll tax returns is the responsibility of the payroll department. The treasurer's department makes the tax payment. Much of the information for the returns is obtained from employee earnings records.

For purposes of reporting and remitting to the IRS, the company combines the FICA taxes and federal income taxes that it withheld. **Companies must report the taxes quarterly**, no later than one month following the close of each quarter. The remitting requirements depend on the amount of taxes withheld and the length of the pay period. Companies remit funds through deposits in either a Federal Reserve bank or an authorized commercial bank.

Companies generally file and remit federal unemployment taxes **annually** on or before January 31 of the subsequent year. Earlier payments are required when the tax exceeds a specified amount. Companies usually must file and pay state unemployment taxes by the **end of the month following each quarter**. When payroll taxes are paid, companies debit payroll liability accounts, and credit Cash.

## Anatomy of a Fraud

Art was a custodial supervisor for a large school district. The district was supposed to employ between 35 and 40 regular custodians, as well as 3 or 4 substitute custodians to fill in when regular custodians were absent. Instead, in addition to the regular custodians, Art "hired" 77 substitutes. In fact, almost none of these people worked for the district. Instead, Art submitted time cards for these people, collected their checks at the district office, and personally distributed the checks to the "employees." If a substitute's check was for $1,200, that person would cash the check, keep $200, and pay Art $1,000.

### Total take: $150,000

### The Missing Controls

**Human resource controls.** Thorough background checks should be performed. No employees should begin work until they have been approved by the Board of Education and entered into the payroll system. No employees should be entered into the payroll system until they have been approved by a supervisor. All paychecks should be distributed directly to employees at the official school locations by designated employees or direct-deposited into approved employee bank accounts.

**Independent internal verification.** Budgets should be reviewed monthly to identify situations where actual costs significantly exceed budgeted amounts.

**Source:** Adapted from Wells, *Fraud Casebook* (2007), pp. 164–171.

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Employers also must provide each employee with a **Wage and Tax Statement (Form W-2)** by January 31 following the end of a calendar year. This statement shows gross earnings, FICA taxes withheld, and income taxes withheld for the year. The required W-2 form for Michael Jordan, using assumed annual data, is shown in **Illustration 11.17**. The employer must send a copy of each employee's Wage and Tax Statement (Form W-2) to the Social Security Administration. This agency subsequently furnishes the Internal Revenue Service with the income data required.

**ILLUSTRATION 11.17** **W-2 form**

| | | | |
|---|---|---|---|
| 22222 Void ☐ | a Employee's social security number 329-35-9547 | For Official Use Only ► OMB No. 1545-0008 | |
| b Employer identification number (EIN) 36-2167852 | | 1 Wages, tips, other compensation 26,300.00 | 2 Federal income tax withheld 2,248.00 |
| c Employer's name, address, and ZIP code<br>Academy Company<br>19 Center St.<br>Hampton, MI 48291 | | 3 Social security wages 26,300.00 | 4 Social security tax withheld 1,630.60 |
| | | 5 Medicare wages and tips 26,300.00 | 6 Medicare tax withheld 381.35 |
| | | 7 Social security tips | 8 Allocated tips |
| d Control number | | 9 Advance EIC payment | 10 Dependent care benefits |
| e Employee's first name and initial: Michael / Last name: Jordan / Suff. | | 11 Nonqualified plans | 12a See instructions for box 12 Code |
| 2345 Mifflin Ave.<br>Hampton, MI 48292 | | 13 Statutory employee ☐ Retirement plan ☐ Third-party sick pay ☐ | 12b Code |
| | | 14 Other | 12c Code |
| | | | 12d Code |
| f Employee's address and ZIP code | | | |

| 15 State | Employer's state ID number | 16 State wages, tips, etc. | 17 State income tax | 18 Local wages, tips, etc. | 19 Local income tax | 20 Locality name |
|---|---|---|---|---|---|---|
| MI | 423-1466-3 | 26,300.00 | 526.00 | | | |

Form **W-2** **Wage and Tax Statement** **2020** Department of the Treasury—Internal Revenue Service

**Copy A For Social Security Administration —** Send this entire page with Form W-3 to the Social Security Administration; photocopies are **not** acceptable.

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Cat. No. 10134D

## Internal Control for Payroll

Chapter 8 introduced internal control. As applied to payrolls, the objectives of internal control are (1) to safeguard company assets against unauthorized payments of payrolls, and (2) to ensure the accuracy and reliability of the accounting records pertaining to payrolls.

Irregularities often result if internal control is lax. Frauds involving payroll include overstating hours, using unauthorized pay rates, adding fictitious employees to the payroll, continuing terminated employees on the payroll, and distributing duplicate payroll checks. Moreover, inaccurate records will result in incorrect paychecks, financial statements, and payroll tax returns.

Payroll activities involve four functions: hiring employees, timekeeping, preparing the payroll, and paying the payroll. For effective internal control, companies should assign these four functions to different departments or individuals. **Illustration 11.18** highlights these functions and illustrates their internal control features.

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**ILLUSTRATION 11.18** **Internal control for payroll**

| Payroll Function | | Payroll Function | |
|---|---|---|---|
| **Hiring Employees** | **Internal control feature:** Human Resources department documents and authorizes employment. **Fraud prevented:** Fictitious employees are not added to payroll. | **Preparing the Payroll** | **Internal control feature:** Two (or more) employees verify payroll amounts; supervisor approves. **Fraud prevented:** Payroll calculations are accurate and relevant. |
| **Timekeeping** | **Internal control feature:** Supervisors monitor hours worked through time cards and time reports. **Fraud prevented:** Employee not paid for hours not worked. | **Paying the Payroll** | **Internal control feature:** Treasurer signs and distributes prenumbered checks. **Fraud prevented:** Checks are not lost, misappropriated, or unavailable for proof of payment; endorsed check provides proof of payment. |

## DO IT! 3b | Employer's Payroll Taxes

In January, the payroll supervisor determines that gross earnings for Halo Company are $70,000. All earnings are subject to 7.65% FICA taxes, 5.4% state unemployment taxes, and 0.8% federal unemployment taxes. Halo asks you to record the employer's payroll taxes.

**ACTION PLAN**

- Compute the employer's payroll taxes on the period's gross earnings.
- Identify the expense account(s) to be debited.
- Identify the liability account(s) to be credited.

### Solution

The entry to record the employer's payroll taxes is:

| | | |
|---|---|---|
| Payroll Tax Expense | 9,695 | |
| FICA Taxes Payable ($70,000 × 7.65%) | | 5,355 |
| Federal Unemployment Taxes Payable ($70,000 × 0.8%) | | 560 |
| State Unemployment Taxes Payable ($70,000 × 5.4%) | | 3,780 |
| (To record employer's payroll taxes on January payroll) | | |

Related exercise material: **BE11.9, DO IT! 11.3b, E11.11, and E11.13.**

# Appendix 11A Additional Fringe Benefits

**LEARNING OBJECTIVE *4**

Discuss additional fringe benefits associated with employee compensation.

In addition to the traditional payroll-tax fringe benefits (Social Security taxes, Medicare taxes, and state and federal unemployment taxes), employers incur other substantial fringe benefit costs. Two of the most important are paid absences and postretirement benefits.

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## Paid Absences

Employees often are given rights to receive compensation for absences when they meet certain conditions of employment. The compensation may be for paid vacations, sick pay benefits, and paid holidays. When the payment for such absences is **probable** and the amount can be **reasonably estimated**, the company should accrue a liability for paid future absences. When the amount cannot be reasonably estimated, the company should instead disclose the potential liability. Ordinarily, vacation pay is the only paid absence that is accrued. The other types of paid absences are only disclosed.

To illustrate, assume that Academy Company employees are entitled to one day's vacation for each month worked. If 30 employees earn an average of $110 per day in a given month, the accrual for vacation benefits in one month is $3,300. Academy records the liability at the end of the month by the following adjusting entry.

| | | | |
|---|---|---|---|
| Jan. 31 | Vacation Benefits Expense | 3,300 | |
| | Vacation Benefits Payable | | 3,300 |
| | (To accrue vacation benefits expense) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | –3,300 Exp |
| | | +3,300 | | |

**Cash Flows**
no effect

This accrual is required by the expense recognition principle. Academy would report Vacation Benefits Expense as an operating expense in the income statement, and Vacation Benefits Payable as a current liability in the balance sheet.

Later, when Academy pays vacation benefits, it debits Vacation Benefits Payable and credits Cash. For example, if employees take 10 days of vacation in July, the entry is as follows.

| | | | |
|---|---|---|---|
| July 31 | Vacation Benefits Payable | 1,100 | |
| | Cash | | 1,100 |
| | (To record payment of vacation benefits) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | –1,100 | | |
| –1,100 | | | | |

**Cash Flows**
–1,100

The magnitude of unpaid absences has gained employers' attention. Consider the case of an assistant superintendent of schools who worked for 20 years and rarely took a vacation or sick day. A month or so before she retired, the school district discovered that she was due nearly $30,000 in accrued benefits. Yet the school district had never accrued the liability.

## Postretirement Benefits

**Postretirement benefits** are benefits that employers provide to retired employees for (1) pensions and (2) healthcare and life insurance. Companies account for both types of postretirement benefits on the accrual basis. The cost of postretirement benefits is getting steep. For example, states and localities must deal with a $1 trillion deficit in public employees' retirement benefit funds. This shortfall amounts to more than $8,800 for every household in the nation.

Average Americans have debt of approximately $10,000 (not counting the mortgage on their home) and little in the way of savings. What will happen at retirement for these people? The picture is not pretty—people are living longer, the future of Social Security is unclear, and companies are cutting back on postretirement benefits. This situation may lead to one of the great social and moral dilemmas this country faces in the next 40 years. The more you know about postretirement benefits, the better you will understand the issues involved in this dilemma.

### Postretirement Healthcare and Life Insurance Benefits

Providing medical and related healthcare benefits for retirees was at one time an inexpensive and highly effective way of generating employee goodwill. This practice has now turned into one of corporate America's most worrisome financial problems. Runaway medical costs, early retirement, and increased longevity are sending the liability for retiree health plans through the roof.

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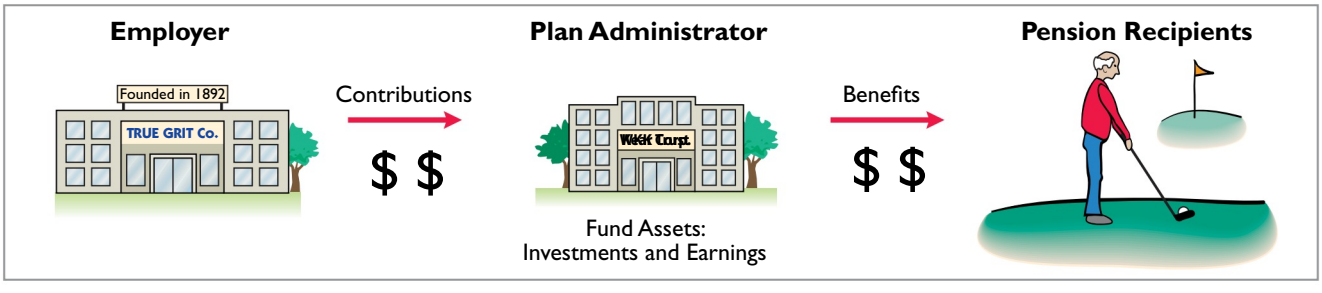
Companies estimate and expense postretirement costs during the working years of the employee because the company benefits from the employee's services during this period. However, the company rarely sets up funds to meet the cost of the future benefits. It follows a pay-as-you-go basis for these costs. The major reason is that the company does not receive a tax deduction until it actually pays the medical bill.

## Pension Plans

A **pension plan** is an agreement whereby an employer provides benefits (payments) to employees after they retire. The need for good accounting for pension plans becomes apparent when we consider the size of existing pension funds. Over 50 million workers currently participate in pension plans in the United States. Most pension plans are subject to the provisions of ERISA (Employee Retirement Income Security Act), a law enacted to curb abuses in the administration and funding of such plans.

Three parties are generally involved in a pension plan. The **employer** (company) sponsors the pension plan. The **plan administrator** receives the contributions from the employer, invests the pension assets, and makes the benefit payments to the **pension recipients** (retired employees). **Illustration 11A.1** indicates the flow of cash among the three parties involved in a pension plan.

**ILLUSTRATION 11A.1** **Parties in a pension plan**




An employer-financed pension is part of the employees' compensation. ERISA establishes the minimum contribution that a company must make each year toward employee pensions. The most popular type of pension plan used is the 401(k) plan. A 401(k) plan works as follows. As an employee, you can contribute up to a certain percentage of your pay into a 401(k) plan, and your employer will match a percentage of your contribution. These contributions are then generally invested in stocks and bonds through mutual funds. These funds will grow without being taxed and can be withdrawn beginning at age 59-1/2. If you must access the funds earlier, you may be able to do so, but a penalty usually occurs along with a payment of tax on the proceeds. Any time you have the opportunity to be involved in a 401(k) plan, you should avail yourself of this benefit!

Companies record pension costs as an expense while the employees are working because that is when the company receives benefits from the employees' services. Generally, the pension expense is reported as an operating expense in the company's income statement. Frequently, the amount contributed by the company to the pension plan is different from the amount of the pension expense. A **liability** is recognized when the pension expense to date is **more than** the company's contributions to date. An **asset** is recognized when the pension expense to date is **less than** the company's contributions to date. Further consideration of the accounting for pension plans is left for more advanced courses.

The two most common types of pension arrangements for providing benefits to employees after they retire are defined-contribution plans and defined-benefit plans.

**Defined-Contribution Plan.** In a **defined-contribution plan**, the plan defines the employer's contribution but not the benefit that the employee will receive at retirement. That is, the employer agrees to contribute a certain sum each period based on a formula. A 401(k) plan is typically a defined-contribution plan.

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The accounting for a defined-contribution plan is straightforward. The employer simply makes a contribution each year based on the formula established in the plan. As a result, the employer's obligation is easily determined. It follows that the company reports **the amount of the contribution required each period as pension expense**. **The employer reports a liability only if it has not made the contribution in full.**

To illustrate, assume that Alba Office Interiors has a defined-contribution plan in which it contributes $200,000 each year to the pension fund for its employees. The entry to record this transaction is:

| | | |
|---|---|---|
| Pension Expense | 200,000 | |
| Cash | | 200,000 |
| (To record pension expense and contribution to pension fund) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | –200,000 |
| –200,000 | | | | |

**Cash Flows**
–200,000

To the extent that Alba did not contribute the $200,000 defined contribution, it would record a liability. Pension payments to retired employees are made from the pension fund by the plan administrator.

**Defined-Benefit Plan.** In a **defined-benefit plan**, the **benefits** that the employee will receive at the time of retirement are defined by the terms of the plan. Benefits are typically calculated using a formula that considers an employee's compensation level when he or she nears retirement and the employee's years of service. Because the benefits in this plan are defined in terms of uncertain future variables, an appropriate funding pattern is established to ensure that enough funds are available at retirement to meet the benefits promised. This funding level depends on a number of factors such as employee turnover, length of service, mortality, compensation levels, and investment earnings. **The proper accounting for these plans is complex and is considered in more advanced accounting courses.**

### Postretirement Benefits as Long-Term Liabilities

While part of the liability associated with (1) postretirement healthcare and life insurance benefits and (2) pension plans is generally a current liability, the greater portion of these liabilities extends many years into the future. Therefore, many companies are required to report significant amounts as long-term liabilities for postretirement benefits.

# Review and Practice

## Learning Objectives Review

**1 Explain how to account for current liabilities.**

A current liability is a debt that a company expects to pay within one year or the operating cycle, whichever is longer. The major types of current liabilities are notes payable, accounts payable, sales taxes payable, unearned revenues, and accrued liabilities such as taxes, salaries and wages, and interest payable.

When a promissory note is interest-bearing, the amount of assets received upon the issuance of the note is generally equal to the face value of the note. Interest expense accrues over the life of the note. At maturity, the amount paid equals the face value of the note plus accrued interest.

Companies record sales taxes payable at the time the related sales occur. The company serves as a collection agent for the taxing authority. Sales taxes are not an expense to the company. Companies initially record unearned revenues in an Unearned Revenue account. As a company recognizes revenue, a transfer from unearned revenue to revenue occurs. Companies report the current maturities of long-term debt as a current liability in the balance sheet.

**2 Discuss how current liabilities are reported and analyzed.**

With notes payable, interest payable, accounts payable, and sales taxes payable, an obligation to make a payment exists. In some cases, it is difficult to determine whether a liability exists. These situations are called contingent liabilities. If the contingency is **probable** (likely to occur) and the amount is reasonably estimable, the company should record the liability in the accounts. If the contingency is only

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**reasonably possible** (it could happen), then it should be disclosed only in the notes to the financial statements. If the possibility that the contingency will happen is **remote** (unlikely to occur), it need not be recorded or disclosed.

Companies should report the nature and amount of each current liability in the balance sheet or in schedules in the notes accompanying the statements. The liquidity of a company may be analyzed by computing working capital and the current ratio.

### 3 Explain how to account for payroll.

The computation of the payroll involves gross earnings, payroll deductions, and net pay. In recording the payroll, companies debit Salaries and Wages Expense for gross earnings, credit individual tax and other liability accounts for payroll deductions, and credit Salaries and Wages Payable for net pay. When the payroll is paid, companies debit Salaries and Wages Payable and credit Cash.

Employer payroll taxes consist of FICA, federal unemployment taxes, and state unemployment taxes. The taxes are usually accrued at the time the company records the payroll, by debiting Payroll Tax Expense and crediting separate liability accounts for each type of tax.

The objectives of internal control for payroll are (1) to safeguard company assets against unauthorized payments of payrolls, and (2) to ensure the accuracy of the accounting records pertaining to payrolls.

### *4 Discuss additional fringe benefits associated with employee compensation.

Additional fringe benefits associated with wages are paid absences (paid vacations, sick pay benefits, and paid holidays), and postretirement benefits (pensions, healthcare, and life insurance).The two most common types of pension arrangements are a defined-contribution plan and a defined-benefit plan.

## Glossary Review

**Bonus** Compensation to management and other personnel, based on factors such as increased sales or the amount of net income. (p. 11-10).

**Contingent liability** A potential liability that may become an actual liability in the future. (p. 11-6).

**Current ratio** A measure of a company's liquidity; computed as current assets divided by current liabilities. (p. 11-8).

***Defined-benefit plan** A pension plan in which the benefits that the employee will receive at retirement are defined by the terms of the plan. (p. 11-23).

***Defined-contribution plan** A pension plan in which the employer's contribution to the plan is defined by the terms of the plan. (p. 11-22).

**Employee earnings record** A cumulative record of each employee's gross earnings, deductions, and net pay during the year. (p. 11-13).

**Federal unemployment taxes** Taxes imposed on the employer by the federal government that provide benefits for a limited time period to employees who lose their jobs through no fault of their own. (p. 11-16).

**Fees** Payments made for the services of professionals. (p. 11-10).

**FICA taxes** Taxes designed to provide workers with supplemental retirement, employment disability, and medical benefits. (p. 11-11).

**Gross earnings** Total compensation earned by an employee. (p. 11-10).

**Net pay** Gross earnings less payroll deductions. (p. 11-12).

**Notes payable** Obligations in the form of written notes. (p. 11-3).

**Payroll deductions** Deductions from gross earnings to determine the amount of a paycheck. (p. 11-10).

**Payroll register** A payroll record that accumulates the gross earnings, deductions, and net pay by employee for each pay period. (p. 11-14).

***Pension plan** An agreement whereby an employer provides benefits to employees after they retire. (p. 11-22).

***Postretirement benefits** Payments by employers to retired employees for healthcare, life insurance, and pensions. (p. 11-21).

**Salaries** Employee pay based on a specified amount rather than an hourly rate. (p. 11-10).

**Statement of earnings** A document attached to a paycheck that indicates the employee's gross earnings, payroll deductions, and net pay. (p. 11-15).

**State unemployment taxes** Taxes imposed on the employer by states that provide benefits to employees who lose their jobs. (p. 11-17).

**Wage and Tax Statement (Form W-2)** A form showing gross earnings, FICA taxes withheld, and income taxes withheld, prepared annually by an employer for each employee. (p. 11-19).

**Wages** Amounts paid to employees based on a rate per hour or on a piecework basis. (p. 11-10).

**Working capital** A measure of a company's liquidity; computed as current assets minus current liabilities. (p. 11-8).

## Practice Multiple-Choice Questions

**1. (LO 1)** The time period for classifying a liability as current is one year or the operating cycle, whichever is:

**a.** longer.
**b.** shorter.
**c.** probable.
**d.** possible.

**2. (LO 1)** To be classified as a current liability, a debt must be expected to be paid within:

**a.** one year.
**b.** the operating cycle.
**c.** 2 years.
**d.** (a) or (b), whichever is longer.

**3. (LO 1)** Maggie Sharrer Company borrows $88,500 on September 1, 2020, from Sandwich State Bank by signing an $88,500, 12%, one-year note. What is the accrued interest at December 31, 2020?

**a.** $2,655.
**b.** $3,540.
**c.** $4,425.
**d.** $10,620.

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**4.** **(LO 1)** RS Company borrowed $70,000 on December 1 on a 6-month, 6% note. At December 31:

**a.** neither the note payable nor the interest payable is a current liability.

**b.** the note payable is a current liability, but the interest payable is not.

**c.** the interest payable is a current liability but the note payable is not.

**d.** both the note payable and the interest payable are current liabilities.

**5.** **(LO 1)** Becky Sherrick Company has total proceeds from sales of $4,515. If the proceeds include sales taxes of 5%, the amount to be credited to Sales Revenue is:

**a.** $4,000. **c.** $4,289.25.

**b.** $4,300. **d.** No correct answer given.

**6.** **(LO 1)** Sensible Insurance Company collected a premium of $18,000 for a 1-year insurance policy on April 1. What amount should Sensible report as a current liability for Unearned Service Revenue at December 31?

**a.** $0. **c.** $13,500.

**b.** $4,500. **d.** $18,000.

**7.** **(LO 2)** Working capital is calculated as:

**a.** current assets minus current liabilities.

**b.** total assets minus total liabilities.

**c.** long-term liabilities minus current liabilities.

**d.** Both (b) and (c).

**8.** **(LO 2)** The current ratio is computed as:

**a.** total assets divided by total liabilities.

**b.** total assets divided by current liabilities.

**c.** current assets divided by total liabilities.

**d.** current assets divided by current liabilities.

**9.** **(LO 2)** A contingent liability should be recorded in the accounts when:

**a.** it is probable the contingency will happen, but the amount cannot be reasonably estimated.

**b.** it is reasonably possible the contingency will happen, and the amount can be reasonably estimated.

**c.** it is probable the contingency will happen, and the amount can be reasonably estimated.

**d.** it is reasonably possible the contingency will happen, but the amount cannot be reasonably estimated.

**10.** **(LO 1)** At December 31, Hanes Company prepares an adjusting entry for a product warranty contract. Which of the following accounts is/are included in the entry?

**a.** Miscellaneous Expense. **c.** Repair Parts.

**b.** Warranty Liability. **d.** Both (a) and (b).

**11.** **(LO 3)** Andy Manion earns $14 per hour for a 40-hour week and $21 per hour for any overtime work. If Manion works 45 hours in a week, gross earnings are:

**a.** $560. **c.** $650.

**b.** $630. **d.** $665.

**12.** **(LO 3)** When recording payroll:

**a.** gross earnings are recorded as salaries and wages payable.

**b.** net pay is recorded as salaries and wages expense.

**c.** payroll deductions are recorded as liabilities.

**d.** More than one of the above.

**13.** **(LO 3)** Employer payroll taxes do **not** include:

**a.** federal unemployment taxes.

**b.** state unemployment taxes.

**c.** federal income taxes.

**d.** FICA taxes.

**14.** **(LO 3)** FICA Taxes Payable was credited for $7,500 in the entry when Antonio Company recorded payroll. When Antonio Company records employer's payroll taxes, FICA Taxes Payable should be credited for:

**a.** $0. **c.** $15,000.

**b.** $7,500. **d.** Some other amount.

**15.** **(LO 3)** The department that should pay the payroll is the:

**a.** timekeeping department.

**b.** human resources department.

**c.** payroll department.

**d.** treasurer's department.

***16.** **(LO 4)** Which of the following is **not** an additional fringe benefit?

**a.** Postretirement pensions. **c.** Paid vacations.

**b.** Paid absences. **d.** Salaries.

## Solutions

**1.** **a.** The time period for classifying a liability as current is one year or the operating cycle, whichever is longer, not (b) shorter, (c) probable, or (d) possible.

**2.** **d.** To be classified as a current liability, a debt must be expected to be paid within one year or the operating cycle. Choices (a) and (b) are both correct, but (d) is the better answer. Choice (c) is incorrect.

**3.** **b.** Accrued interest at December 31, 2020, is computed as the face value ($88,500) times the interest rate (12%) times the portion of the year the debt was outstanding (4 months out of 12), or $3,540 ($88,500 × 12% × 4/12), not (a) $2,655, (c) $4,425, or (d) $10,620.

**4.** **d.** Both the note payable and interest payable are current liabilities. Notes due for payment within one year of the balance sheet date are usually classified as current liabilities. The other choices are therefore incorrect.

**5.** **b.** Dividing the total proceeds ($4,515) by one plus the sales tax rate (1.05) will result in the amount of sales to be credited to the Sales Revenue account of $4,300 ($4,515 ÷ 1.05). The other choices are therefore incorrect.

**6.** **b.** The monthly premium is $1,500 or $18,000 divided by 12. Because Sensible has recognized 9 months of insurance revenue (April 1–December 31), 3 months' insurance premium is still unearned. The amount that Sensible should report as Unearned Service Revenue is

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therefore $4,500 (3 months × $1,500), not (a) $0, (c) $13,500, or (d) $18,000.

**7. a.** Working capital is defined as current assets minus current liabilities. The other choices are therefore incorrect.

**8. d.** The current ratio is defined as current assets divided by current liabilities. The other choices are therefore incorrect.

**9. c.** A contingent liability is recorded when the amount can be reasonably estimated and the likelihood of the contingency is probable. The other choices are therefore incorrect.

**10. b.** The adjusting entry for product warranties includes a debit to Warranty Liability, not (a) Miscellaneous Expense, (c) Repair Parts, or (d) both Miscellaneous Expense and Warranty Liability.

**11. d.** Gross earnings are computed as (40 hours × $14 per hour) + (5 hours × $21 per hour) = $665, not (a) $560, (b) $630, or (c) $650.

**12. c.** When recording payroll, payroll deductions are recorded as liabilities. The other choices are incorrect because (a) gross earnings are recorded as salaries and wages expense, (b) net pay is recorded as salaries and wages payable, and (d) only one of the answer choices is true concerning payroll.

**13. c.** Federal income taxes are a payroll deduction, not an employer payroll tax. The employer is merely a collection agent. The other choices are all included in employer payroll taxes.

**14. b.** Each employee pays FICA taxes, but the employer must match each employee's FICA contribution. Because the employer's tax is subject to the same rate and maximum earnings as the employee's, FICA Taxes Payable would also be $7,500. The other choices are therefore incorrect.

**15. d.** The treasurer's department pays or distributes the payroll checks. The other choices are incorrect because (a) the timekeeping department monitors hours worked by employees, (b) the human resources department documents and authorizes employment, and (c) the payroll department prepares the payroll checks.

***16. d.** Salaries are not an additional fringe benefit. The other choices are true statements.

## Practice Brief Exercises

*Compute and record sales taxes payable.*

**1. (LO 1)** Amy Pond Discounts does not segregate sales and sales taxes at the time of sale. The register total for March 17 is $19,928. All sales are subject to a 6% sales tax. Compute sales taxes payable, and make the entry to record sales taxes payable and sales revenue.

### Solution

1. Sales tax payable
   1. Sales = $18,800 ($19,928 ÷ 1.06)
   2. Sales taxes payable = $1,128 ($18,800 × 6%)

| | | | |
|---|---|---|---|
| Mar. 16 | Cash | 19,928 | |
| | Sales Revenue | | 18,800 |
| | Sales Taxes Payable | | 1,128 |

*Prepare adjusting entry for warranty costs.*

**2. (LO 2)** On October 1, Clara Oswald Company introduces a new product that includes a one-year warranty on parts. By December 31, 2020, 3,000 units are sold. Management believes that 6% of the units will be defective and that the average warranty costs will be $120 per unit. Prepare the adjusting entry at December 31 to accrue the estimated warranty cost, assuming no warranty claims are honored in 2020.

### Solution

| | | | |
|---|---|---|---|
| 2. Dec. 31 | Warranty Expense | 21,600 | |
| | Warranty Liability [(3,000 × 6%) × $120] | | 21,600 |

*Compute gross earnings and net pay.*

**3. (LO 3)** Ben Borke's regular hourly wage rate is $20, and he receives an hourly rate of $30 for work in excess of 40 hours. During a January pay period, Ben works 46 hours. Ben's federal income tax withholding is $123, he has no voluntary deductions, and the FICA tax rate is 7.65%. Compute Ben's gross earnings and net pay for the pay period.

### Solution

3. Gross earnings:

| | | |
|---|---|---|
| Regular pay (40 × $20) | $800.00 | |
| Overtime pay (6 × $30) | 180.00 | $980.00 |
| Gross earnings | | $980.00 |
| Less: FICA taxes payable ($980 × 7.65%) | $ 74.97 | |
| Federal income taxes payable | 123.00 | 197.97 |
| Net pay | | $782.03 |

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## Practice Exercises

**1. (LO 1)** On June 1, Streamsong Company borrows $150,000 from First Bank on a 6-month, $150,000, 8% note.

*Prepare entries for interest-bearing notes.*

### Instructions

**a.** Prepare the entry on June 1.

**b.** Prepare the adjusting entry on June 30.

**c.** Prepare the entry at maturity (December 1), assuming monthly adjusting entries have been made through November 30.

**d.** What was the total financing cost (interest expense)?

### Solution

**1. a.** June 1

| | | |
|---|---|---|
| Cash | 150,000 | |
| Notes Payable | | 150,000 |

**b.** June 30

| | | |
|---|---|---|
| Interest Expense | 1,000 | |
| Interest Payable ($150,000 × 8% × 1/12) | | 1,000 |

**c.** Dec. 1

| | | |
|---|---|---|
| Notes Payable | 150,000 | |
| Interest Payable ($150,000 × 8% × 6/12) | 6,000 | |
| Cash | | 156,000 |

**d.** $6,000

**2. (LO 2)** **Financial Statement** Fun App Company has the following liability accounts after posting adjusting entries: Accounts Payable $77,000, Unearned Ticket Revenue $36,000, Warranty Liability $25,000, Interest Payable $10,000, Mortgage Payable $150,000, Notes Payable $100,000, and Sales Taxes Payable $14,000. Assume the company's operating cycle is less than 1 year, ticket revenue will be recognized within 1 year, warranty costs are expected to be incurred within 1 year, and the notes mature in 3 years.

*Prepare current liabilities section of the balance sheet and evaluate liquidity.*

### Instructions

**a.** Prepare the current liabilities section of the balance sheet, assuming $40,000 of the mortgage is payable next year.

**b.** Comment on Fun App Company's liquidity, assuming total current assets are $350,000.

### Solution

**2. a.**

**Fun App Company**
**Partial Balance Sheet**

| | |
|---|---|
| Current liabilities | |
| Accounts payable | $ 77,000 |
| Long-term debt due within one year | 40,000 |
| Unearned ticket revenue | 36,000 |
| Warranty liability | 25,000 |
| Sales taxes payable | 14,000 |
| Interest payable | 10,000 |
| Total current liabilities | $202,000 |

**b.** Fun App Company's working capital is $148,000 ($350,000 − $202,000), and its current ratio is 1.73:1 ($350,000 ÷ $202,000). Although a current ratio of 2:1 has been considered the standard for a good credit rating, many companies operate successfully with a current ratio well below 2:1.

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*Compute net pay and record pay for one employee.*

**3. (LO 3)** Erin Berge's regular hourly wage rate is $18, and she receives a wage of 1½ times the regular hourly rate for work in excess of 40 hours. During a March weekly pay period, Erin worked 42 hours. Her gross earnings prior to the current week were $6,000. Erin is married and claims three withholding allowances. Her only voluntary deduction is for group hospitalization insurance at $20 per week. Assume federal income tax withheld is $76.

### Instructions

**a.** Compute the following amounts for Erin's wages for the current week.

**1.** Gross earnings.

**2.** FICA taxes (based on a 7.65% rate).

**3.** State income taxes withheld (based on a 3% rate).

**4.** Net pay.

**b.** Record Erin's pay.

### Solution

**3. a. 1.** Regular 40 hours × $18 = $720
Overtime 2 hours × $27 = 54
Gross earnings $774

**2.** FICA taxes: ($774 × 7.65%) = $59.21

**3.** State income taxes: ($774 × 3%) = $23.22

**4.** Net Pay: ($774.00 − $59.21 − $76.00 − $23.22 −$20.00) = $595.57

**b.**

| | | |
|---|---|---|
| Salaries and Wages Expense | 774.00 | |
| FICA Taxes Payable | | 59.21 |
| Federal Income Taxes Payable | | 76.00 |
| State Income Taxes Payable | | 23.22 |
| Health Insurance Payable | | 20.00 |
| Salaries and Wages Payable | | 595.57 |

## Practice Problem

Indiana Jones Company had the following selected transactions.

Feb. 1 Signs a $50,000, 6-month, 9%-interest-bearing note payable to CitiBank and receives $50,000 in cash.

10 Cash register sales total $43,200, which includes an 8% sales tax.

28 The payroll for the month consists of salaries and wages of $50,000. All wages are subject to 7.65% FICA taxes. A total of $8,900 federal income taxes are withheld. The salaries are paid on March 1.

28 The company develops the following adjustment data.

1. Interest expense of $375 has been incurred on the note.
2. Employer payroll taxes include 7.65% FICA taxes, a 5.4% state unemployment tax, and a 0.8% federal unemployment tax.
3. Some sales were made under warranty. Of the units sold under warranty, 350 are expected to become defective. Repair costs are estimated to be $40 per unit.

### Instructions

**a.** Journalize the February transactions.

**b.** Journalize the adjusting entries at February 28.

### Solution

**a.**

| | | | |
|---|---|---|---|
| Feb. 1 | Cash | 50,000 | |
| | Notes Payable | | 50,000 |
| | (Issued 6-month, 9%-interest-bearing note to CitiBank) | | |

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| | | | | |
|---|---|---|---|---|
| | 10 | Cash | 43,200 | |
| | | Sales Revenue ($43,200 ÷ 1.08) | | 40,000 |
| | | Sales Taxes Payable ($40,000 × 8%) | | 3,200 |
| | | (To record sales revenue and sales taxes payable) | | |
| | 28 | Salaries and Wages Expense | 50,000 | |
| | | FICA Taxes Payable (7.65% × $50,000) | | 3,825 |
| | | Federal Income Taxes Payable | | 8,900 |
| | | Salaries and Wages Payable | | 37,275 |
| | | (To record February salaries) | | |
| **b.** | Feb. 28 | Interest Expense | 375 | |
| | | Interest Payable | | 375 |
| | | (To record accrued interest for February) | | |
| | 28 | Payroll Tax Expense | 6,925 | |
| | | FICA Taxes Payable | | 3,825 |
| | | Federal Unemployment Taxes Payable (0.8% × $50,000) | | 400 |
| | | State Unemployment Taxes Payable (5.4% × $50,000) | | 2,700 |
| | | (To record employer's payroll taxes on February payroll) | | |
| | 28 | Warranty Expense (350 × $40) | 14,000 | |
| | | Warranty Liability | | 14,000 |
| | | (To record estimated warranty liability) | | |

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendix to the chapter.

## Questions

**1.** Lori Randle believes a current liability is a debt that can be expected to be paid in one year. Is Lori correct? Explain.

**2.** Petrocelli Company obtains $40,000 in cash by signing a 7%, 6-month, $40,000 note payable to First Bank on July 1. Petrocelli's fiscal year ends on September 30. What information should be reported for the note payable in the annual financial statements?

**3.** **a.** Your roommate says, "Sales taxes are reported as an expense in the income statement." Do you agree? Explain.

**b.** Jensen Company has cash proceeds from sales of $8,400. This amount includes $400 of sales taxes. Give the entry to record the proceeds.

**4.** Ottawa University sold 15,000 season football tickets at $80 each for its six-game home schedule. What entries should be made (a) when the tickets were sold, and (b) after each game?

**5.** What is liquidity? What are two measures of liquidity?

**6.** What is a contingent liability? Give an example of a contingent liability that is usually recorded in the accounts.

**7.** Under what circumstances is a contingent liability disclosed only in the notes to the financial statements? Under what circumstances is a contingent liability not recorded in the accounts nor disclosed in the notes to the financial statements?

**8.** What is the difference between gross pay and net pay? Which amount should a company record as wages and salaries expense?

**9.** Which payroll tax is levied on both employers and employees?

**10.** Are the federal and state income taxes withheld from employee paychecks a payroll tax expense for the employer? Explain your answer.

**11.** What do the following acronyms stand for: FICA, FUTA, and SUTA?

**12.** What information is shown in a W-2 statement?

**13.** Distinguish between the two types of payroll deductions and give examples of each.

**14.** What are the primary uses of the employee earnings record?

**15.** **a.** Identify the three types of employer payroll taxes.

**b.** How are tax liability accounts and payroll tax expense accounts classified in the financial statements?

**16.** You are a newly hired accountant with Nolasco Company. On your first day, the controller asks you to identify the main internal

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control objectives related to payroll accounting. How would you respond?

17. What are the four functions associated with payroll activities?

*18. Identify two additional types of fringe benefits associated with employees' compensation.

*19. Often during job interviews, the candidate asks the potential employer about the firm's paid absences policy. What are paid absences? How are they accounted for?

*20. What are two types of postretirement benefits?

*21. Explain how a 401(k) plan works.

*22. What is the principal difference between a defined-contribution pension plan and a defined-benefit pension plan?

## Brief Exercises

*Identify whether obligations are current liabilities.*

**BE11.1 (LO 1)** Jamison Company has the following obligations at December 31: (a) a note payable for $100,000 due in 2 years, (b) a 10-year mortgage payable of $300,000 payable in ten $30,000 annual payments, (c) interest payable of $15,000 on the mortgage, and (d) accounts payable of $60,000. For each obligation, indicate whether it should be classified as a current liability. (Assume an operating cycle of less than one year.)

*Prepare entries for an interest-bearing note payable.*

**BE11.2 (LO 1)** Peralta Company borrows $60,000 on July 1 from the bank by signing a $60,000, 10%, one-year note payable.

**a.** Prepare the journal entry to record the proceeds of the note.

**b.** Prepare the journal entry to record accrued interest at December 31, assuming adjusting entries are made only at the end of the year.

*Compute and record sales taxes payable.*

**BE11.3 (LO 1)** Coghlan Auto Supply does not segregate sales and sales taxes at the time of sale. The register total for March 16 is $16,380. All sales are subject to a 5% sales tax. Compute sales taxes payable, and make the entry to record sales taxes payable and sales revenue.

*Prepare entries for unearned revenues.*

**BE11.4 (LO 1)** Derby University sells 4,000 season basketball tickets at $210 each for its 12-game home schedule. Give the entry to record (a) the sale of the season tickets and (b) the revenue recognized by playing the first home game.

*Analyze liquidity.*

**BE11.5 (LO 2)** **Yahoo! Inc.**'s recent financial statements contain the following selected data (in thousands).

| | | | |
|---|---|---|---|
| Current assets | $ 4,594,772 | Current liabilities | $1,717,728 |
| Total assets | 14,936,030 | Total liabilities | 2,417,394 |

Compute (a) working capital and (b) current ratio.

*Prepare adjusting entry for warranty costs.*

**BE11.6 (LO 2)** On December 1, Bruney Company introduces a new product that includes a one-year warranty on parts. In December, 1,000 units are sold. Management believes that 5% of the units will be defective and that the average warranty costs will be $90 per unit. Prepare the adjusting entry at December 31 to accrue the estimated warranty cost, assuming no warranty claims have been honored to date.

*Compute gross earnings and net pay.*

**BE11.7 (LO 3)** Beth Corbin's regular hourly wage rate is $16, and she receives an hourly rate of $24 for work in excess of 40 hours. During a January pay period, Beth works 45 hours. Beth's federal income tax withholding is $95, she has no voluntary deductions, and the FICA tax rate is 7.65%. Compute Beth Corbin's gross earnings and net pay for the pay period.

*Record a payroll and the payment of wages.*

**BE11.8 (LO 3)** Data for Beth Corbin are presented in BE11.7. Prepare the journal entries to record (a) Beth's pay for the period and (b) the payment of Beth's wages. Use January 15 for the end of the pay period and the payment date.

*Record employer payroll taxes.*

**BE11.9 (LO 3)** In January, gross earnings in Lugo Company totaled $80,000. All earnings are subject to 7.65% FICA taxes, 5.4% state unemployment taxes, and 0.8% federal unemployment taxes. Prepare the entry to record January payroll tax expense.

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**BE11.10 (LO 3)** Swenson Company has the following payroll procedures. *Identify payroll functions.*

**a.** Supervisor approves overtime work.

**b.** The human resources department prepares hiring authorization forms for new hires.

**c.** A second payroll department employee verifies payroll calculations.

**d.** The treasurer's department pays employees.

Identify the payroll function to which each procedure pertains.

***BE11.11 (LO 4)** At Ward Company, employees are entitled to one day's vacation for each month worked. In January, 70 employees worked the full month. Record the vacation pay liability for January, assuming the average daily pay for each employee is $120. *Record estimated vacation benefits.*

## DO IT! Exercises

**DO IT! 11.1 (LO 1)** You and several classmates are studying for the next accounting exam. They ask you to answer the following questions: *Answer questions about current liabilities.*

1. If cash is borrowed on a $70,000, 9-month, 6% note on August 1, how much interest expense would be incurred by December 31?
2. The cash register total including sales taxes is $42,000, and the sales tax rate is 5%. What is the sales taxes payable?
3. If $45,000 is collected in advance on November 1 for 6-month magazine subscriptions, what amount of subscription revenue should be recognized by December 31?

**DO IT! 11.2 (LO 2)** **Financial Statement** Medlen Company, has the following account balances at December 31, 2020. *Prepare current liabilities section and compute liquidity measures.*

| | |
|---|---|
| Notes payable ($60,000 due after 12/31/21) | $100,000 |
| Unearned service revenue | 70,000 |
| Other long-term debt ($90,000 due in 2021) | 250,000 |
| Salaries and wages payable | 32,000 |
| Accounts payable | 63,000 |

In addition, Medlen is involved in a lawsuit. Legal counsel feels it is probable Medlen will pay damages of $25,000 in 2021.

**a.** Prepare the current liabilities section of Medlen's December 31, 2020, balance sheet.

**b.** Medlen's current assets are $570,000. Compute Medlen's working capital and current ratio.

**DO IT! 11.3a (LO 3)** In January, gross earnings in Burrell Company were $80,000. All earnings are subject to 7.65% FICA taxes. Federal income tax withheld was $14,000, and state income tax withheld was $1,600. (a) Calculate net pay for January, and (b) record the payroll. *Calculate net pay and record payroll.*

**DO IT! 11.3b (LO 3)** In January, the payroll supervisor determines that gross earnings for Carlyle Company are $120,000. All earnings are subject to 7.65% FICA taxes, 5.4% state unemployment taxes, and 0.8% federal unemployment taxes. Record the employer's payroll taxes. *Record employer's payroll taxes.*

## Exercises

**E11.1 (LO 1)** C.S. Lewis Company had the following transactions involving notes payable. *Prepare entries for interest-bearing notes.*

| | |
|---|---|
| July 1, 2020 | Borrows $50,000 from First National Bank by signing a 9-month, 8% note. |
| Nov. 1, 2020 | Borrows $60,000 from Lyon County State Bank by signing a 3-month, 6% note. |
| Dec. 31, 2020 | Prepares adjusting entries. |
| Feb. 1, 2021 | Pays principal and interest to Lyon County State Bank. |
| Apr. 1, 2021 | Pays principal and interest to First National Bank. |

### Instructions

Prepare journal entries for each of the transactions.

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*Prepare entries for interest-bearing notes.*

**E11.2 (LO 1)** On June 1, Merando Company borrows $90,000 from First Bank on a 6-month, $90,000, 8% note.

### Instructions

**a.** Prepare the entry on June 1.

**b.** Prepare the adjusting entry on June 30.

**c.** Prepare the entry at maturity (December 1), assuming monthly adjusting entries have been made through November 30.

**d.** What was the total financing cost (interest expense)?

*Journalize sales and related taxes.*

**E11.3 (LO 1)** In performing accounting services for small businesses, you encounter the following situations pertaining to cash sales.

1. Poole Company enters sales and sales taxes separately on its cash register. On April 10, the register totals are sales $30,000 and sales taxes $1,500.
2. Waterman Company does not segregate sales and sales taxes. Its register total for April 15 is $25,680, which includes a 7% sales tax.

### Instructions

Prepare the entry to record the sales transactions and related taxes for each client.

*Journalize unearned subscription revenue.*

**E11.4 (LO 1)** Moreno Company publishes a monthly sports magazine, *Fishing Preview*. Subscriptions to the magazine cost $20 per year. During November 2020, Moreno sells 15,000 subscriptions beginning with the December issue. Moreno prepares financial statements quarterly and recognizes subscription revenue at the end of the quarter. The company uses the accounts Unearned Subscription Revenue and Subscription Revenue.

### Instructions

**a.** Prepare the entry in November for the receipt of the subscriptions.

**b.** Prepare the adjusting entry at December 31, 2020, to record sales revenue recognized in December 2020.

**c.** Prepare the adjusting entry at March 31, 2021, to record sales revenue recognized in the first quarter of 2021.

*Record estimated liability and expense for warranties.*

**E11.5 (LO 2)** Betancourt Company sells automatic can openers under a 75-day warranty for defective merchandise. Based on past experience, Betancourt estimates that 3% of the units sold will become defective during the warranty period. Management estimates that the average cost of replacing or repairing a defective unit is $15. The units sold and units defective that occurred during the last 2 months of 2020 are as follows.

| Month | Units Sold | Units Defective Prior to December 31 |
|---|---|---|
| November | 30,000 | 600 |
| December | 32,000 | 400 |

### Instructions

**a.** Prepare the journal entry to record the costs incurred in honoring 1,000 warranty claims. (Assume actual costs of $15,000.)

**b.** Prepare the journal entry to record the warranty liability at December 31 for the units sold in November and December.

**c.** Give the entry to record the honoring of 500 warranty contracts in January at an average cost of $15.

*Record and disclose contingent liabilities.*

**E11.6 (LO 2)** Gallardo Co. is involved in a lawsuit as a result of an accident that took place September 5, 2020. The lawsuit was filed on November 1, 2020, and claims damages of $1,000,000.

### Instructions

**a.** At December 31, 2020, Gallardo's attorneys feel it is remote that Gallardo will lose the lawsuit. How should the company account for the effects of the lawsuit?

**b.** Assume instead that at December 31, 2020, Gallardo's attorneys feel it is probable that Gallardo will lose the lawsuit and be required to pay $1,000,000. How should the company account for this lawsuit?

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**c.** Assume instead that at December 31, 2020, Gallardo's attorneys feel it is reasonably possible that Gallardo could lose the lawsuit and be required to pay $1,000,000. How should the company account for this lawsuit?

**E11.7 (LO 2)** **Financial Statement** Younger Online Company has the following liability accounts after posting adjusting entries: Accounts Payable $73,000, Unearned Ticket Revenue $24,000, Warranty Liability $18,000, Interest Payable $8,000, Mortgage Payable $120,000, Notes Payable $80,000, and Sales Taxes Payable $10,000. Assume the company's operating cycle is less than 1 year, ticket revenue will be recognized within 1 year, warranty costs are expected to be incurred within 1 year, and the notes mature in 3 years.

*Prepare the current liabilities section of the balance sheet.*

### Instructions

**a.** Prepare the current liabilities section of the balance sheet, assuming $30,000 of the mortgage is payable next year.

**b.** Comment on Younger Online Company's liquidity, assuming total current assets are $300,000.

**E11.8 (LO 2)** Suppose the following financial data were reported by **3M Company** for 2019 and 2020 (dollars in millions).

*Calculate current ratio and working capital before and after paying accounts payable.*

**3M Company**
**Balance Sheets (partial)**

| | 2020 | 2019 |
|---|---|---|
| Current assets | | |
| Cash and cash equivalents | $ 3,040 | $1,849 |
| Accounts receivable, net | 3,250 | 3,195 |
| Inventories | 2,639 | 3,013 |
| Other current assets | 1,866 | 1,541 |
| Total current assets | $10,795 | $9,598 |
| Current liabilities | $ 4,897 | $5,839 |

### Instructions

**a.** Calculate the current ratio and working capital for 3M for 2019 and 2020.

**b.** Suppose that at the end of 2020, 3M management used $200 million cash to pay off $200 million of accounts payable. How would its current ratio and working capital have changed?

**E11.9 (LO 3)** Maria Garza's regular hourly wage rate is $16, and she receives a wage of 1½ times the regular hourly rate for work in excess of 40 hours. During a March weekly pay period, Maria worked 42 hours. Her gross earnings prior to the current week were $6,000. Maria is married and claims three withholding allowances. Her only voluntary deduction is for group hospitalization insurance at $25 per week.

*Compute net pay and record pay for one employee.*

### Instructions

**a.** Compute the following amounts for Maria's wages for the current week.

1. Gross earnings.
2. FICA taxes. (Assume a 7.65% rate on maximum of $127,200.)
3. Federal income taxes withheld. (Use the withholding table in Illustration 11.11.)
4. State income taxes withheld. (Assume a 2.0% rate.)
5. Net pay.

**b.** Record Maria's pay.

**E11.10 (LO 3)** Employee earnings records for Slaymaker Company reveal the following gross earnings for four employees through the pay period of December 15.

*Compute maximum FICA deductions.*

| | | | |
|---|---|---|---|
| J. Seligman | $93,500 | L. Marshall | $115,100 |
| R. Eby | $113,600 | T. Olson | $140,000 |

For the pay period ending December 31, each employee's gross earnings is $4,500. The FICA tax rate is 7.65% on gross earnings of $127,200.

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**Instructions**

Compute the FICA withholdings that should be made for each employee for the December 31 pay period. (Show computations.)

*Prepare payroll register and record payroll and payroll tax expense.*

**E11.11 (LO 3)** Ramirez Company has the following data for the weekly payroll ending January 31.

| | Hours | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Employee | M | T | W | T | F | S | Hourly Rate | Federal Income Tax Withholding | Health Insurance |
| L. Helton | 8 | 8 | 9 | 8 | 10 | 3 | $12 | $34 | $10 |
| R. Kenseth | 8 | 8 | 8 | 8 | 8 | 2 | 14 | 37 | 25 |
| D. Tavaras | 9 | 10 | 8 | 8 | 9 | 0 | 15 | 58 | 25 |

Employees are paid 1½ times the regular hourly rate for all hours worked in excess of 40 hours per week. FICA taxes are 7.65% on the first $127,200 of gross earnings. Ramirez Company is subject to 5.4% state unemployment taxes and 0.8% federal unemployment taxes on the first $7,000 of gross earnings.

**Instructions**

**a.** Prepare the payroll register for the weekly payroll.

**b.** Prepare the journal entries to record the payroll and Ramirez's payroll tax expense.

*Compute missing payroll amounts and record payroll.*

**E11.12 (LO 3)** Selected data from a February payroll register for Sutton Company are presented below. Some amounts are intentionally omitted.

| | | | |
|---|---|---|---|
| Gross earnings: | | State income taxes | $ (3) |
| Regular | $9,100 | Union dues | 100 |
| Overtime | (1) | Total deductions | (4) |
| Total | (2) | Net pay | $7,595 |
| Deductions: | | Account debited: | |
| FICA taxes | $ 765 | Salaries and wages expense | (5) |
| Federal income taxes | 1,140 | | |

FICA taxes are 7.65%. State income taxes are 4% of gross earnings.

**Instructions**

**a.** Fill in the missing amounts.

**b.** Journalize the February payroll and the payment of the payroll.

*Determine employer's payroll taxes; record payroll tax expense.*

**E11.13 (LO 3)** According to a payroll register summary of Frederickson Company, the amount of employees' gross pay in December was $850,000, of which $80,000 was not subject to Social Security taxes of 6.2% and $750,000 was not subject to state and federal unemployment taxes.

**Instructions**

**a.** Determine the employer's payroll tax expense for the month, using the following rates: FICA 7.65%, state unemployment 5.4%, and federal unemployment 0.8%.

**b.** Prepare the journal entry to record December payroll tax expense.

*Prepare adjusting entries for fringe benefits.*

***E11.14 (LO 4)** Mayberry Company has two fringe benefit plans for its employees:

1. It grants employees 2 days' vacation for each month worked. Ten employees worked the entire month of March at an average daily wage of $140 per employee.
2. In its pension plan, the company recognizes 10% of gross earnings as a pension expense. Gross earnings in March were $40,000. No contribution has been made to the pension fund.

**Instructions**

Prepare the adjusting entries at March 31.

*Prepare journal entries for fringe benefits.*

***E11.15 (LO 4)** Podsednik Corporation has 20 employees who each earn $140 a day. The following information is available.

1. At December 31, Podsednik recorded vacation benefits. Each employee earned 5 vacation days during the year.

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2. At December 31, Podsednik recorded pension expense of $100,000, and made a contribution of $70,000 to the pension plan.
3. In January, 18 employees used one vacation day each.

### Instructions

Prepare Podsednik's journal entries to record these transactions.

## Problems: Set A

**P11.1A (LO 1, 2)** **Financial Statement** On January 1, 2020, the ledger of Accardo Company contains the following liability accounts.

*Prepare current liability entries, adjusting entries, and current liabilities section.*

GLS

| | |
|---|---|
| Accounts Payable | $52,000 |
| Sales Taxes Payable | 7,700 |
| Unearned Service Revenue | 16,000 |

During January, the following selected transactions occurred.

Jan. 5 Sold merchandise for cash totaling $20,520, which includes 8% sales taxes.
12 Performed services for customers who had made advance payments of $10,000. (Credit Service Revenue.)
14 Paid state revenue department for sales taxes collected in December 2019 ($7,700).
20 Sold 900 units of a new product on credit at $50 per unit, plus 8% sales tax. This new product is subject to a 1-year warranty.
21 Borrowed $27,000 from Girard Bank on a 3-month, 8%, $27,000 note.
25 Sold merchandise for cash totaling $12,420, which includes 8% sales taxes.

### Instructions

**a.** Journalize the January transactions.

**b.** Journalize the adjusting entries at January 31 for (1) the outstanding notes payable, and (2) estimated warranty liability, assuming warranty costs are expected to equal 7% of sales of the new product. (*Hint:* Use one-third of a month for the Girard Bank note.)

**c.** Prepare the current liabilities section of the balance sheet at January 31, 2020. Assume no change in accounts payable.

c. Current liability total $94,250

**P11.2A (LO 1, 2)** **Financial Statement** The following are selected transactions of Blanco Company. Blanco prepares financial statements **quarterly**.

*Journalize and post note transactions; show balance sheet presentation.*

Jan. 2 Purchased merchandise on account from Nunez Company, $30,000, terms 2/10, n/30. (Blanco uses the perpetual inventory system.)
Feb. 1 Issued a 9%, 2-month, $30,000 note to Nunez in payment of account.
Mar. 31 Accrued interest for 2 months on Nunez note.
Apr. 1 Paid face value and interest on Nunez note.
July 1 Purchased equipment from Marson Equipment paying $11,000 in cash and signing a 10%, 3-month, $60,000 note.
Sept. 30 Accrued interest for 3 months on Marson note.
Oct. 1 Paid face value and interest on Marson note.
Dec. 1 Borrowed $24,000 from the Paola Bank by issuing a 3-month, 8% note with a face value of $24,000.
Dec. 31 Recognized interest expense for 1 month on Paola Bank note.

### Instructions

**a.** Prepare journal entries for the listed transactions and events.

**b.** Post to the accounts Notes Payable, Interest Payable, and Interest Expense.

**c.** Show the balance sheet presentation of notes and interest payable at December 31.

**d.** What is total interest expense for the year?

d. $2,110

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*Prepare payroll register and payroll entries.*

**P11.3A (LO 3)** Mann Hardware has four employees who are paid on an hourly basis plus time-and-a-half for all hours worked in excess of 40 a week. Payroll data for the week ended March 15, 2020, are presented below.

| Employee | Hours Worked | Hourly Rate | Federal Income Tax Withholdings | United Fund |
|---|---|---|---|---|
| Ben Abel | 40 | $15.00 | $ ? | $5.00 |
| Rita Hager | 42 | 16.00 | ? | 5.00 |
| Jack Never | 44 | 13.00 | 60.00 | 8.00 |
| Sue Perez | 46 | 13.00 | 61.00 | 5.00 |

Abel and Hager are married. They claim 0 and 4 withholding allowances, respectively. The following tax rates are applicable: FICA 7.65%, state income taxes 3%, state unemployment taxes 5.4%, and federal unemployment 0.8%.

**Instructions**

a. Net pay $2,039.30

b. Payroll tax expense $349.43

d. Cash paid $578.02

**a.** Prepare a payroll register for the weekly payroll. (Use the wage-bracket withholding table in the text for federal income tax withholdings.)

**b.** Journalize the payroll on March 15, 2020, and the accrual of employer payroll taxes.

**c.** Journalize the payment of the payroll on March 16, 2020.

**d.** Journalize the deposit in a Federal Reserve bank on March 31, 2020, of the FICA and federal income taxes payable to the government.

*Journalize payroll transactions and adjusting entries.*

GLS

**P11.4A (LO 3, 4)** The following payroll liability accounts are included in the ledger of Harmon Company on January 1, 2020.

| | |
|---|---|
| FICA Taxes Payable | $ 760.00 |
| Federal Income Taxes Payable | 1,204.60 |
| State Income Taxes Payable | 108.95 |
| Federal Unemployment Taxes Payable | 288.95 |
| State Unemployment Taxes Payable | 1,954.40 |
| Union Dues Payable | 870.00 |
| U.S. Savings Bonds Payable | 360.00 |

In January, the following transactions occurred.

Jan. 10 Sent check for $870.00 to union treasurer for union dues.
12 Remitted check for $1,964.60 to the Federal Reserve bank for FICA taxes and federal income taxes withheld.
15 Purchased U.S. Savings Bonds for employees by writing check for $360.00.
17 Paid state income taxes withheld from employees.
20 Paid federal and state unemployment taxes.
31 Completed monthly payroll register, which shows salaries and wages $58,000, FICA taxes withheld $4,437, federal income taxes payable $2,158, state income taxes payable $454, union dues payable $400, United Fund contributions payable $1,888, and net pay $48,663.
31 Prepared payroll checks for the net pay and distributed checks to employees.

At January 31, the company also makes the following accrued adjustments pertaining to employee compensation.

**1.** Employer payroll taxes: FICA taxes 7.65%, federal unemployment taxes 0.8%, and state unemployment taxes 5.4%.

***2.** Vacation pay: 6% of gross earnings.

**Instructions**

b. Payroll tax expense $8,033; Vacation benefits expense $3,480

**a.** Journalize the January transactions.

**b.** Journalize the adjustments pertaining to employee compensation at January 31.

*Prepare entries for payroll and payroll taxes; prepare W-2 data.*

**P11.5A (LO 3)** For the year ended December 31, 2020, Denkinger Electrical Repair Company reports the following summary payroll data.

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| | |
|---|---|
| Gross earnings: | |
| Administrative salaries | $200,000 |
| Electricians' wages | 370,000 |
| Total | $570,000 |
| Deductions: | |
| FICA taxes | $ 38,645 |
| Federal income taxes withheld | 174,400 |
| State income taxes withheld (3%) | 17,100 |
| United Fund contributions payable | 27,500 |
| Health insurance premiums | 17,200 |
| Total | $274,845 |

Denkinger's payroll taxes are Social Security tax 6.2%, Medicare tax 1.45%, state unemployment 2.5% (due to a stable employment record), and 0.8% federal unemployment. Gross earnings subject to Social Security taxes of 6.2% total $490,000, and gross earnings subject to unemployment taxes total $135,000. No employee exceeds the $127,200 limit related to FICA taxes.

### Instructions

**a.** Prepare a summary journal entry at December 31 for the full year's payroll.

**b.** Journalize the adjusting entry at December 31 to record the employer's payroll taxes.

**c.** The W-2 Wage and Tax Statement requires the following dollar data.

a. Salaries and wages payable $295,155
b. Payroll tax expense $43,100

| Wages, Tips, Other Compensation | Federal Income Tax Withheld | State Income Tax Withheld | FICA Wages | FICA Tax Withheld |
|---|---|---|---|---|

Complete the required data for the following employees.

| Employee | Gross Earnings | Federal Income Tax Withheld |
|---|---|---|
| Maria Sandoval | $59,000 | $28,500 |
| Jennifer Mingenback | 26,000 | 10,200 |

## Continuing Case

### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 10.)

**CC11** Recall that Cookie Creations sells fine European mixers that it purchases from Kzinski Supply Co. Kzinski warrants the mixers to be free of defects in material and workmanship for a period of one year from the date of original purchase. If the mixer has such a defect, Kzinski will repair or replace the mixer free of charge for parts and labor.

*Go to* **WileyPLUS** *for complete case details and instructions.*

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## Ethics Case

**EC11** Robert Eberle owns and manages Robert's Restaurant, a 24-hour restaurant near the city's medical complex. Robert employs 9 full-time employees and 16 part-time employees. He pays all of the full-time employees by check, the amounts of which are determined by Robert's public accountant, Anne Farr. Robert pays all of his part-time employees in currency. He computes their wages and withdraws the cash directly from his cash register.

Anne has repeatedly urged Robert to pay all employees by check. But as Robert has told his competitor and friend, Danny Gall, who owns the Greasy Diner, "My part-time employees prefer the currency over a check. Also, I don't withhold or pay any taxes or worker's compensation insurance on those cash wages because they go totally unrecorded and unnoticed."

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**Instructions**

**a.** Who are the stakeholders in this situation?

**b.** What are the legal and ethical considerations regarding Robert's handling of his payroll?

**c.** Anne Farr is aware of Robert's payment of the part-time payroll in currency. What are her ethical responsibilities in this case?

**d.** What internal control principle is violated in this payroll process?

## Comprehensive Accounting Cycle Review

**ACR11** **Financial Statement** Morgan Company's balance sheet at December 31, 2019, is presented below.

**Morgan Company**
**Balance Sheet**
**December 31, 2019**

| | | | |
|---|---|---|---|
| Cash | $ 30,000 | Accounts Payable | $ 13,750 |
| Inventory | 30,750 | Interest Payable | 250 |
| Prepaid Insurance | 6,000 | Notes Payable | 50,000 |
| Equipment | 38,000 | Owner's Capital | 40,750 |
| | $104,750 | | $104,750 |

During January 2020, the following transactions occurred. (Morgan Company uses the perpetual inventory system.)

1. Morgan paid $250 interest on the note payable on January 1, 2020. The note is due December 31, 2021.
2. Morgan purchased $261,100 of inventory on account.
3. Morgan sold for $440,000 cash, inventory which cost $265,000. Morgan also collected $28,600 in sales taxes.
4. Morgan paid $230,000 in accounts payable.
5. Morgan paid $17,000 in sales taxes to the state.
6. Paid other operating expenses of $30,000.
7. On January 31, 2020, the payroll for the month consists of salaries and wages of $60,000. All salaries and wages are subject to 7.65% FICA taxes. A total of $8,900 federal income taxes are withheld. The salaries and wages are paid on February 1.

**Adjustment data:**

8. Interest expense of $250 has been incurred in January on the notes payable.
9. The insurance for the year 2020 was prepaid on December 31, 2019.
10. The equipment was acquired on December 31, 2019, and will be depreciated on a straight-line basis over 5 years with a $2,000 salvage value.
11. Employer's payroll taxes include 7.65% FICA taxes, a 5.4% state unemployment tax, and an 0.8% federal unemployment tax.

**Instructions**

(You may need to set up T-accounts to determine ending balances.)

**a.** Prepare journal entries for the transactions listed above and the adjusting entries.

**b.** Prepare an adjusted trial balance at January 31, 2020.

**c.** Prepare an income statement, an owner's equity statement for the month ending January 31, 2020, and a classified balance sheet as of January 31, 2020.

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT11.1** The financial statements of **Apple Inc.** are presented in Appendix A. The complete annual report, including the notes to the financial statements, is available at the company's website.

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### Instructions

Refer to Apple's financial statements and answer the following questions about current and contingent liabilities and payroll costs.

**a.** What were Apple's total current liabilities at September 26, 2015? What was the increase/decrease in Apple's total current liabilities from the prior year?

**b.** In Apple's Note 10, the company explains the nature of its contingencies. Under what conditions does Apple recognize (record and report) liabilities for contingencies?

**c.** What were the components of total current liabilities on September 26, 2015?

## Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT11.2** **PepsiCo, Inc.**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

### Instructions

**a.** At December 26, 2015, what was PepsiCo's largest current liability account? What were its total current liabilities? At December 31, 2015, what was Coca-Cola's largest current liability account? What were its total current liabilities?

**b.** Based on information contained in those financial statements, compute the following 2015 values for each company:

**1.** Working capital.

**2.** Current ratio.

**c.** What conclusions concerning the relative liquidity of these companies can be drawn from these data?

## Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT11.3** **Amazon.com Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

### Instructions

**a.** At December 31, 2015, what was Amazon's largest current liability account? What were its total current liabilities? At January 31, 2016, what was Wal-Mart's largest current liability account? What were its total current liabilities?

**b.** Based on information in these financial statements, compute the following 2015 values for Amazon and 2016 values for Wal-Mart:

**1.** Working capital.

**2.** Current ratio.

**c.** What conclusions concerning the relative liquidity of these companies can be drawn from these data?

## Real-World Focus

**CT11.4** The **Internal Revenue Service** provides considerable information over the Internet, including answers to payroll tax questions faced by employers.

### Instructions

Go to the IRS website and access *Publication 15 (Circular E), Employer's Tax Guide* (available on the Forms & Publications page under the EBooks tab). Answer each of the following questions.

**a.** How does the government define "employees"?

**b.** What are the special rules for Social Security and Medicare regarding children who are employed by their parents?

**c.** How can an employee obtain a Social Security card if he or she doesn't have one?

**d.** Must employees report to their employer tips received from customers? If so, how?

**e.** Where should the employer deposit Social Security taxes withheld or contributed?

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## Decision-Making Across the Organization

**CT11.5** Cunningham Processing Company performs word-processing services for business clients and students in a university community. The work for business clients is fairly steady throughout the year. The work for students peaks significantly in December and May as a result of term papers, research project reports, and dissertations.

Two years ago, the company attempted to meet the peak demand by hiring part-time help. This led to numerous errors and much customer dissatisfaction. A year ago, the company hired four experienced employees on a permanent basis in place of part-time help. This proved to be much better in terms of productivity and customer satisfaction. But, it has caused an increase in annual payroll costs and a significant decline in annual net income.

Recently, Melissa Braun, a sales representative of Banister Services Inc., has made a proposal to the company. Under her plan, Banister will provide up to four experienced workers at a daily rate of $80 per person for an 8-hour workday. Banister workers are not available on an hourly basis. Cunningham would have to pay only the daily rate for the workers used.

The owner of Cunningham Processing, Carol Holt, asks you, as the company's accountant, to prepare a report on the expenses that are pertinent to the decision. If the Banister plan is adopted, Carol will terminate the employment of two permanent employees and will keep two permanent employees. At the moment, each employee earns an annual income of $22,000. Cunningham pays 7.65% FICA taxes, 0.8% federal unemployment taxes, and 5.4% state unemployment taxes. The unemployment taxes apply to only the first $7,000 of gross earnings. In addition, Cunningham pays $40 per month for each employee for medical and dental insurance. Carol indicates that if the Banister Services plan is accepted, her needs for temporary workers will be as follows.

| Months | Number of Employees | Working Days per Month |
|---|---|---|
| January–March | 2 | 20 |
| April–May | 3 | 25 |
| June–October | 2 | 18 |
| November–December | 3 | 23 |

### Instructions

With the class divided into groups, answer the following.

**a.** Prepare a report showing the comparative payroll expense of continuing to employ permanent workers compared to adopting the Banister Services Inc. plan.

**b.** What other factors should Carol consider before finalizing her decision?

## Communication Activity

**CT11.6** Mike Falcon, president of the Brownlee Company, has recently hired a number of additional employees. He recognizes that additional payroll taxes will be due as a result of this hiring, and that the company will serve as the collection agent for other taxes.

### Instructions

In a memorandum to Mike Falcon, explain each of the taxes, and identify the taxes that result in payroll tax expense to Brownlee Company.

## All About You

**CT11.7** Medical costs are substantial and rising. But will they be the most substantial expense over your lifetime? Not likely. Will it be housing or food? Again, not likely. The answer is taxes. On average, Americans work 107 days to afford their taxes. Companies, too, have large tax burdens. They look very hard at tax issues in deciding where to build their plants and where to locate their administrative headquarters.

### Instructions

**a.** Determine what your state income taxes are if your taxable income is $60,000 and you file as a single taxpayer in the state in which you live.

**b.** Assume that you own a home worth $200,000 in your community and the tax rate is 2.1%. Compute the property taxes you would pay.

**c.** Assume that the total gasoline bill for your automobile is $1,200 a year (300 gallons at $4 per gallon). What are the amounts of state and federal taxes that you pay on the $1,200?

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**d.** Assume that your purchases for the year total $9,000. Of this amount, $5,000 was for food and prescription drugs. What is the amount of sales tax you would pay on these purchases? (Many states do not levy a sales tax on food or prescription drugs. Does yours?)

**e.** Determine what your Social Security taxes are if your income is $60,000.

**f.** Determine what your federal income taxes are if your taxable income is $60,000 and you file as a single taxpayer.

**g.** Determine your total taxes paid based on the above calculations, and determine the percentage of income that you would pay in taxes based on the following formula: Total taxes paid ÷ Total income.

### FASB Codification Activity

**CT11.8** If your school has a subscription to the FASB Codification, log in and prepare responses to the following.

**a.** What is the definition of current liabilities?

**b.** What is the definition of a contingent liability?

**c.** What guidance does the Codification provide for the disclosure of contingent liabilities?

## A Look at IFRS

**LEARNING OBJECTIVE 5**

Compare the accounting for payroll under GAAP and IFRS.

IFRS and GAAP have similar definitions of liabilities. The general recording procedures for payroll are similar, although differences occur depending on the types of benefits that are provided in different countries. For example, companies in other countries often have different forms of pensions, unemployment benefits, welfare payments, and so on.

### Key Points

Following are the key similarities and differences between GAAP and IFRS related to current liabilities and payroll.

#### Similarities

- The basic definition of a liability under GAAP and IFRS is very similar. In a more technical way, liabilities are defined by the IASB as a present obligation of the entity arising from past events, the settlement of which is expected to result in an outflow from the entity of resources embodying economic benefits.
- The accounting for current liabilities such as notes payable, unearned revenue, and payroll taxes payable are similar between IFRS and GAAP.
- Under IFRS, liabilities are classified as current if they are expected to be paid within 12 months.

#### Differences

- Companies using IFRS sometimes show liabilities before assets. Also, they will sometimes show long-term liabilities before current liabilities.
- Under IFRS, companies sometimes will net current liabilities against current assets to show working capital on the face of the statement of financial position.
- Under GAAP, some contingent liabilities are recorded in the financial statements, others are disclosed, and in some cases no disclosure is required. Unlike GAAP, IFRS reserves the use of the term **contingent liability** to refer only to possible obligations that are **not** recognized in the financial statements but may be disclosed if certain criteria are met.
- For those items that GAAP would treat as recordable contingent liabilities, IFRS instead uses the term provisions. **Provisions** are defined as liabilities of uncertain timing or amount. Examples of

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provisions would be provisions for warranties, employee vacation pay, or anticipated losses. Under IFRS, the measurement of a provision related to an uncertain obligation is based on the best estimate of the expenditure required to settle the obligation.

### Looking to the Future

The FASB and IASB are currently involved in two projects, each of which has implications for the accounting for liabilities. One project is investigating approaches to differentiate between debt and equity instruments. The other project, the elements phase of the conceptual framework project, will evaluate the definitions of the fundamental building blocks of accounting. The results of these projects could change the classification of many debt and equity securities.

## IFRS Practice

### IFRS Self-Test Questions

1. Which of the following is **false**?
   - **a.** Under IFRS, current liabilities must always be presented before noncurrent liabilities.
   - **b.** Under IFRS, an item is a current liability if it will be paid within the next 12 months.
   - **c.** Under IFRS, current liabilities are sometimes netted against current assets on the statement of financial position.
   - **d.** Under IFRS, a liability is only recognized if it is a present obligation.
2. Under IFRS, a contingent liability is:
   - **a.** disclosed in the notes if certain criteria are met.
   - **b.** reported on the face of the financial statements if certain criteria are met.
   - **c.** the same as a provision.
   - **d.** not covered by IFRS.
3. Under IFRS, obligations related to warranties are considered:
   - **a.** contingent liabilities.
   - **b.** provisions.
   - **c.** possible obligations.
   - **d.** None of these.
4. The joint projects of the FASB and IASB could potentially:
   - **a.** change the definition of liabilities.
   - **b.** change the definition of equity.
   - **c.** change the definition of assets.
   - **d.** All of the above.

### IFRS Exercises

**IFRS11.1** Define a provision and give an example.

**IFRS11.2** Briefly describe some of the similarities and differences between GAAP and IFRS with respect to the accounting for liabilities.

### International Financial Statement Analysis: Louis Vuitton

**IFRS11.3** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to the financial statements, is available at the company's website.

#### Instructions

- **a.** What were the total current liabilities for the company as of December 31, 2015? What portion of these current liabilities related to provisions?
- **b.** What is the company's accounting policies related to provisions?

#### Answers to IFRS Self-Test Questions

**1.** a **2.** a **3.** b **4.** d

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# Accounting for Partnerships

## Chapter Preview

It is not surprising that when Cliff Chenfeld and Craig Balsam began **Razor & Tie** (see the following Feature Story), they decided to use the partnership form of organization. Both saw the need for hands-on control of their product and its promotion. In this chapter, we discuss reasons why businesses select the partnership form of organization. We also explain the major issues in accounting for partnerships.

## Feature Story

### From Trials to the Top Ten

In 1990, Cliff Chenfeld and Craig Balsam gave up the razors, ties, and six-figure salaries they had become accustomed to as New York lawyers. Instead, they set up a partnership, **Razor & Tie Music**, in Cliff's living room. Ten years later, it became the only record company in the country that had achieved success in selling music both on television and in stores. Razor & Tie's entertaining and effective TV commercials have yielded unprecedented sales for multi-artist music compilations. At the same time, its hot retail label has been behind some of the most recent original, progressive releases from artists such as Norma Jean, For Today, Chelsea Grin, and Starset.

Razor & Tie got its start with its first TV release, *Those Fabulous '70s* (100,000 copies sold), followed by *Disco Fever* (over 300,000 sold). After restoring the respectability of the oft-maligned music of the 1970s, the partners forged into the musical '80s with the same zeal that elicited success with their first releases. In 1993, Razor & Tie released *Totally '80s*, a collection of Top-10 singles from the 1980s that has sold over 450,000 units.

In 1995, Razor & Tie broke into the contemporary music world with *Living in the '90s*, the most successful record in the history of the company. Featuring a number of songs that

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were still hits on the radio at the time the package initially aired, *Living in the '90s* was a blockbuster. It received Gold certification in less than nine months and rewrote the rules on direct-response albums. For the first time, contemporary music was available through an album offered only through direct-response spots.

In fact, Razor & Tie is now a vertically integrated business that includes a music company with major label distribution, a music publishing business, a media buying company, a home video company, a direct marketing operation, and a growing database of entertainment consumers.

Razor & Tie has carved out a sizable piece of the market through the complementary talents of the two partners. Their imagination and savvy, along with exciting new releases planned for the coming years, ensure Razor & Tie's continued growth.

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Discuss and account for the formation of a partnership. | • Characteristics of partnerships<br>• Organizations with partnership characteristics<br>• Advantages and disadvantages of partnerships<br>• The partnership agreement<br>• Accounting for a partnership formation | **DO IT! 1** Partnership Organization |
| **LO 2** Explain how to account for net income or net loss of a partnership. | • Dividing net income or net loss<br>• Partnership financial statements | **DO IT! 2** Division of Net Income |
| **LO 3** Explain how to account for the liquidation of a partnership. | • No capital deficiency<br>• Capital deficiency | **DO IT! 3a** Partnership Liquidation—No Capital Deficiency<br>**DO IT! 3b** Partnership Liquidation—Capital Deficiency |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

# Forming a Partnership

**LEARNING OBJECTIVE 1**

Discuss and account for the formation of a partnership.

A **partnership** is an association of two or more persons to carry on as co-owners of a business for profit. Partnerships are sometimes used in small retail, service, or manufacturing companies. Accountants, lawyers, and doctors also find it desirable to form partnerships with other professionals in the field.

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# Characteristics of Partnerships

Partnerships are fairly easy to form. People form partnerships simply by a verbal agreement or more formally by written agreement. We explain the principal characteristics of partnerships in the following sections.

## Association of Individuals

A partnership is a legal entity. A partnership can own property (land, buildings, equipment) and can sue or be sued. **A partnership also is an accounting entity.** Thus, the personal assets, liabilities, and transactions of the partners are excluded from the accounting records of the partnership, just as they are in a proprietorship.

The net income of a partnership is not taxed as a separate entity. But, a partnership must file an information tax return showing partnership net income and each partner's share of that net income. Each partner's share is taxable at **personal tax rates**, regardless of the amount of net income each withdraws from the business during the year.

Association of Individuals

## Mutual Agency

**Mutual agency** means that each partner acts on behalf of the partnership when engaging in partnership business. The act of any partner is binding on all other partners. This is true even when partners act beyond the scope of their authority, so long as the act appears to be appropriate for the partnership. For example, a partner of a grocery store who purchases a delivery truck creates a binding contract in the name of the partnership, even if the partnership agreement denies this authority. On the other hand, if a partner in a law firm purchased a snowmobile for the partnership, such an act would not be binding on the partnership. The purchase is clearly outside the scope of partnership business.

Mutual Agency

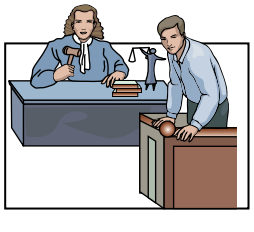
## Limited Life

Corporations have unlimited life. Partnerships do not. A partnership may be ended voluntarily at any time through the acceptance of a new partner or the withdrawal of a partner. It may be ended involuntarily by the death or incapacity of a partner. **Partnership dissolution** occurs whenever a partner withdraws or a new partner is admitted. Dissolution does not necessarily mean that the business ends. If the continuing partners agree, operations can continue without interruption by forming a new partnership.

Limited Life

## Unlimited Liability

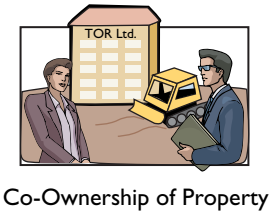
Each partner is **personally and individually liable** for all partnership liabilities. Creditors' claims attach first to partnership assets. If these are insufficient, the claims then attach to the personal resources of any partner, irrespective of that partner's equity in the partnership. Because each partner is responsible for all the debts of the partnership, each partner is said to have **unlimited liability**.


Unlimited Liability

## Co-Ownership of Property

Partners jointly own partnership assets. If the partnership is dissolved, each partner has a claim on total assets equal to the balance in his or her respective capital account. This claim does not attach to **specific assets** that an individual partner contributed to the firm. Similarly, if a partner invests a building in the partnership valued at $100,000 and the building is later sold at a gain of $20,000, the partners all share in the gain.

Partnership net income (or net loss) is also co-owned. **If the partnership contract does not specify to the contrary, all net income or net loss is shared equally by the partners.** As you will see later, though, partners may agree to unequal sharing of net income or net loss.



Co-Ownership of Property

# Organizations with Partnership Characteristics

If you are starting a business with a friend and each of you has little capital and your business is not risky, you probably want to use a partnership. As indicated above, the partnership is

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easy to establish and its cost is minimal. These types of partnerships are often called **regular partnerships**. However if your business is risky—say, roof repair or performing some type of professional service—you will want to limit your liability and not use a regular partnership. As a result, special forms of business organizations with partnership characteristics are now often used to provide protection from unlimited liability for people who wish to work together in some activity.

The special partnership forms are limited partnerships, limited liability partnerships, and limited liability companies. These special forms use the same accounting procedures as those described for a regular partnership. In addition, for taxation purposes, all the profits and losses pass through these organizations (similar to the regular partnership) to the owners, who report their share of partnership net income or losses on their personal tax returns.

## Limited Partnerships

**INTERNATIONAL NOTE**

**Much of the funding for successful new U.S. businesses comes from "venture capital" firms, which are organized as limited partnerships. To develop its own venture capital industry, China has taken steps to model its partnership laws to allow for limited partnerships like those in the United States.**

In a **limited partnership**, one or more partners have **unlimited liability** and one or more partners have **limited liability** for the debts of the firm. Those with unlimited liability are **general partners**. Those with limited liability are **limited partners**. Limited partners are responsible for the debts of the partnership up to the limit of their investment in the firm (see **International Note**).

The words "Limited Partnership," "Ltd.," or "LP" identify this type of organization. For the privilege of limited liability, the limited partner usually accepts less compensation than a general partner and exercises less influence in the affairs of the firm. If the limited partners get involved in management, they risk their liability protection.

## Limited Liability Partnership

**HELPFUL HINT**

**In an LLP, *all* partners have limited liability. There are no general partners.**

Most states allow professionals such as lawyers, doctors, and accountants to form a **limited liability partnership** or "LLP." The LLP is designed to protect innocent partners from malpractice or negligence claims resulting from the acts of another partner (see **Helpful Hint**). LLPs generally carry large insurance policies as protection against malpractice suits. These professional partnerships vary in size from a medical partnership of three to five doctors, to 150 to 200 partners in a large law firm, to more than 2,000 partners in an international accounting firm.

## Limited Liability Companies

A hybrid form of business organization with certain features like a corporation and others like a limited partnership is the **limited liability company** or "LLC." An LLC usually has a limited life. The owners, called **members**, have limited liability like owners of a corporation. Whereas limited partners do not actively participate in the management of a limited partnership (LP), the members of a limited liability company (LLC) can assume an active management role. For income tax purposes, the IRS usually classifies an LLC as a partnership.

## Accounting Across the Organization

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### Limited Liability Companies Gain in Popularity

The proprietorship form of business organization is still the most popular, followed by the corporate form. But whenever a group of individuals wants to form a partnership, the limited liability company is usually the popular choice.

One other form of business organization is a **subchapter S corporation**. A subchapter S corporation has many of the characteristics of a partnership—especially taxation as a partnership—but it is losing its popularity. The reason: It involves more paperwork and expense than a limited liability company, which in most cases offers similar advantages.

**Why do you think that the use of the limited liability company is gaining in popularity? (Go to WileyPLUS for this answer and additional questions.)**

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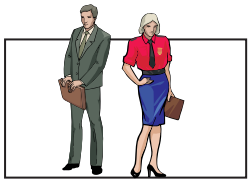
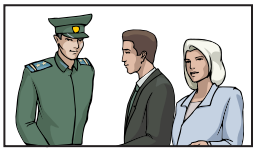
**Illustration 12.1** summarizes different forms of organizations that have partnership characteristics.

**ILLUSTRATION 12.1**
**Different forms of organizations with partnership characteristics**

| | Major Advantages | Major Disadvantages |
|---|---|---|
| **Regular Partnership**<br>  <br>General Partners | Simple and inexpensive to create and operate. | Owners (partners) personally liable for business debts. |
| **Limited Partnership**<br>  <br>General Partner / Limited Partners | Limited partners have limited personal liability for business debts as long as they do not participate in management.<br><br>General partners can raise cash without involving outside investors in management of business. | General partners personally liable for business debts.<br><br>More expensive to create than regular partnership.<br><br>Suitable mainly for companies that invest in real estate. |
| **Limited Liability Partnership**<br> | Mostly of interest to partners in old-line professions such as law, medicine, and accounting.<br><br>Owners (partners) are not personally liable for the malpractice of other partners. | Unlike a limited liability company, owners (partners) remain personally liable for many types of obligations owed to business creditors, lenders, and landlords.<br><br>Often limited to a short list of professions. |
| **Limited Liability Company**<br> | Owners have limited personal liability for business debts even if they participate in management. | More expensive to create than regular partnership. |

*Source: www.nolo.com.*

## Advantages and Disadvantages of Partnerships

Why do people choose partnerships? One major advantage of a partnership is to combine the skills and resources of two or more individuals. In addition, partnerships are easily formed and are relatively free from government regulations and restrictions. A partnership does not have to contend with the "red tape" that a corporation must face. Also, partners generally can make decisions quickly on substantive business matters without having to consult a board of directors.

On the other hand, partnerships also have some major disadvantages. **Unlimited liability** is particularly troublesome. Many individuals fear they may lose not only their initial investment but also their personal assets if those assets are needed to pay partnership creditors.

**Illustration 12.2** summarizes the advantages and disadvantages of the regular partnership form of business organization. As indicated previously, different types of partnership forms have evolved to reduce some of the disadvantages.

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**ILLUSTRATION 12.2**

**Advantages and disadvantages of a partnership**

| Advantages | Disadvantages |
|---|---|
| Combining skills and resources of two or more individuals | Mutual agency |
| Ease of formation | Limited life |
| Freedom from governmental regulations and restrictions | Unlimited liability |
| Ease of decision-making | |

## The Partnership Agreement

Ideally, the agreement of two or more individuals to form a partnership should be expressed in a written contract, called the **partnership agreement** or **articles of co-partnership**. The partnership agreement contains such basic information as the name and principal location of the firm, the purpose of the business, and date of inception. In addition, it should specify relationships among the partners, such as:

1. Names and capital contributions of partners.
2. Rights and duties of partners.
3. Basis for sharing net income or net loss.
4. Provision for withdrawals of assets.
5. Procedures for submitting disputes to arbitration.
6. Procedures for the withdrawal or addition of a partner.
7. Rights and duties of surviving partners in the event of a partner's death.

We cannot overemphasize the importance of a written contract. The agreement should attempt to anticipate all possible situations, contingencies, and disagreements (see **Ethics Note**). The help of a lawyer is highly desirable in preparing the agreement.

**ETHICS NOTE**

**A well-developed partnership agreement specifies in clear and concise language the process by which the partners will resolve ethical and legal problems. This issue is especially significant when the partnership experiences financial distress.**

## Accounting Across the Organization

### Dividing Up the Pie

PhotoDisc/Getty Images, Inc.

What should you do when you and your business partner disagree to the point where you are no longer on speaking terms? Given how heated business situations can get, this is not an unusual occurrence. Unfortunately, in many instances the partners do everything they can to undermine each other, eventually destroying the business. In some cases, people even steal from the partnership because they either feel that they "deserve it" or they assume that the other partners are stealing from them.

It would be much better to follow the example of Jennifer Appel and her partner. They found that after opening a successful bakery and writing a cookbook, they couldn't agree on how the business should be run. The other partner bought out Ms. Appel's share of the business. Ms. Appel went on to start her own style of bakery, which she ultimately franchised.

**Source:** Paulette Thomas, "As Partnership Sours, Parting Is Sweet," *Wall Street Journal*, (July 6, 2004), p. A20.

**How can partnership conflicts be minimized and more easily resolved? (Go to WileyPLUS for this answer and additional questions.)**

## Accounting for a Partnership Formation

We now turn to the basic accounting for partnerships. The major accounting issues relate to forming the partnership, dividing income or loss, and preparing financial statements.

When forming a partnership, each partner's initial investment in a partnership is entered in the partnership records. The partnership should record these investments at the **fair value**

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**of the assets at the date of their transfer to the partnership**. All partners must agree to the values assigned.

To illustrate, assume that A. Rolfe and T. Shea combine their proprietorships to start a partnership named U.S. Software. The firm will specialize in developing financial modeling software. Rolfe and Shea have the assets listed in **Illustration 12.3** prior to the formation of the partnership.

**ILLUSTRATION 12.3**
**Book and fair values of assets invested**

| | Book Value | | Fair Value | |
|---|---|---|---|---|
| | A. Rolfe | T. Shea | A. Rolfe | T. Shea |
| Cash | $ 8,000 | $ 9,000 | $ 8,000 | $ 9,000 |
| Equipment | 5,000 | | 4,000 | |
| Accumulated depreciation—equipment | (2,000) | | | |
| Accounts receivable | | 4,000 | | 4,000 |
| Allowance for doubtful accounts | | (700) | | (1,000) |
| | $11,000 | $12,300 | $12,000 | $12,000 |

*Items under **owners' equity (OE)** in the accounting equation analyses are not labeled in this partnership chapter. Nearly all affect partners' **capital** accounts.*

The partnership records the investments as follows.

**Investment of A. Rolfe**

| | | |
|---|---|---|
| Cash | 8,000 | |
| Equipment | 4,000 | |
| A. Rolfe, Capital | | 12,000 |
| (To record investment of Rolfe) | | |

A = L + OE
+8,000
+4,000
+12,000

**Cash Flows**
+8,000

**Investment of T. Shea**

| | | |
|---|---|---|
| Cash | 9,000 | |
| Accounts Receivable | 4,000 | |
| Allowance for Doubtful Accounts | | 1,000 |
| T. Shea, Capital | | 12,000 |
| (To record investment of Shea) | | |

A = L + OE
+9,000
+4,000
−1,000
+12,000

**Cash Flows**
+9,000

Note that the partnership records neither the original cost of the equipment ($5,000) nor its book value ($5,000 − $2,000). It records the equipment at its fair value, $4,000. The partnership does not carry forward any accumulated depreciation from the books of previous entities (in this case, the two proprietorships).

In contrast, the gross claims on customers ($4,000) are carried forward to the partnership. The partnership adjusts the allowance for doubtful accounts to $1,000, to arrive at a cash (net) realizable value of $3,000. A partnership may start with an allowance for doubtful accounts because it will continue to collect existing accounts receivable, some of which are expected to be uncollectible. In addition, this procedure maintains the control and subsidiary relationship between Accounts Receivable and the accounts receivable subsidiary ledger.

After formation of the partnership, the accounting for transactions is similar to any other type of business organization. For example, the partners record all transactions with outside parties, such as the purchase or sale of inventory and the payment or receipt of cash, the same as would a sole proprietor.

The steps in the accounting cycle described in Chapter 4 for a proprietorship also apply to a partnership. For example, the partnership prepares a trial balance and journalizes and posts adjusting entries. A worksheet may be used. There are minor differences in journalizing and posting closing entries and in preparing financial statements, as we explain in the following sections. The differences occur because there is more than one owner.

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### DO IT! 1 | Partnership Organization

Indicate whether each of the following statements is true or false. If false, indicate how to correct the statement.

_____ **1.** Partnerships have unlimited life. Corporations do not.

_____ **2.** Partners jointly own partnership assets. A partner's claim on partnership assets does not attach to specific assets.

_____ **3.** In a limited partnership, the general partners have unlimited liability.

_____ **4.** The members of a limited liability company have limited liability, like shareholders of a corporation, and they are taxed like corporate shareholders.

_____ **5.** Because of mutual agency, the act of any partner is binding on all other partners.

**ACTION PLAN**

- **When forming a business, carefully consider what type of organization would best suit the needs of the business.**
- **Keep in mind the new, "hybrid" organizational forms that have many of the best characteristics of partnerships and corporations.**

**Solution**

**1.** False. Corporations have unlimited life. Partnerships do not. **2.** True. **3.** True. **4.** False. The members of a limited liability company are taxed like partners in a partnership. **5.** True.

Related exercise material: **DO IT! 12.1 and E12.1.**

# Accounting for Net Income or Net Loss

**LEARNING OBJECTIVE 2**

Explain how to account for net income or net loss of a partnership.

## Dividing Net Income or Net Loss

**Partners equally share partnership net income or net loss unless the partnership contract indicates otherwise.** The same basis of division usually applies to both net income and net loss. It is customary to refer to this basis as the **income ratio**, the **income and loss ratio**, or the **profit and loss (P&L) ratio**. Because of its wide acceptance, we use the term **income ratio** to identify the basis for dividing net income and net loss. The partnership recognizes a partner's share of net income or net loss in the accounts through closing entries.

### Closing Entries

As in the case of a proprietorship, a partnership must make four entries in preparing closing entries. The entries are:

1. Debit each revenue account for its balance, and credit Income Summary for total revenues.
2. Debit Income Summary for total expenses, and credit each expense account for its balance.
3. Debit Income Summary for its balance, and credit each partner's capital account for his or her share of net income. Or, credit Income Summary, and debit each partner's capital account for his or her share of net loss.
4. Debit each partner's capital account for the balance in that partner's drawings account, and credit each partner's drawings account for the same amount.

The first two entries are the same as in a proprietorship. The last two entries are different because (1) there are two or more owners' capital and drawings accounts, and (2) it is necessary to divide net income (or net loss) among the partners.

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To illustrate the last two closing entries, assume that AB Company has net income of $32,000 for 2020. The partners, L. Arbor and D. Barnett, share net income and net loss equally. Drawings for the year were Arbor $8,000 and Barnett $6,000. The last two closing entries are as follows.

| | | | |
|---|---|---|---|
| Dec. 31 | Income Summary | 32,000 | |
| | L. Arbor, Capital ($32,000 × 50%) | | 16,000 |
| | D. Barnett, Capital ($32,000 × 50%) | | 16,000 |
| | (To transfer net income to partners' capital accounts) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | −32,000 |
| | | | | +16,000 |
| | | | | +16,000 |

**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| Dec. 31 | L. Arbor, Capital | 8,000 | |
| | D. Barnett, Capital | 6,000 | |
| | L. Arbor, Drawings | | 8,000 |
| | D. Barnett, Drawings | | 6,000 |
| | (To close drawings accounts to capital accounts) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | −8,000 |
| | | | | −6,000 |
| | | | | +8,000 |
| | | | | +6,000 |

**Cash Flows**
no effect

Assume that the beginning capital balance is $47,000 for Arbor and $36,000 for Barnett. After posting the closing entries, the capital and drawings accounts will appear as shown in **Illustration 12.4**.

**ILLUSTRATION 12.4**
**Partners' capital and drawings accounts after closing**

**L. Arbor, Capital**

| | | | | | |
|---|---|---|---|---|---|
| 12/31 | Clos. | 8,000 | 1/1 | Bal. | 47,000 |
| | | | 12/31 | Clos. | 16,000 |
| | | | 12/31 | Bal. | 55,000 |

**D. Barnett, Capital**

| | | | | | |
|---|---|---|---|---|---|
| 12/31 | Clos. | 6,000 | 1/1 | Bal. | 36,000 |
| | | | 12/31 | Clos. | 16,000 |
| | | | 12/31 | Bal. | 46,000 |

**L. Arbor, Drawings**

| | | | | | |
|---|---|---|---|---|---|
| 12/31 | Bal. | 8,000 | 12/31 | Clos. | 8,000 |

**D. Barnett, Drawings**

| | | | | | |
|---|---|---|---|---|---|
| 12/31 | Bal. | 6,000 | 12/31 | Clos. | 6,000 |

As in a proprietorship, the partners' capital accounts are permanent accounts. Their drawings accounts are temporary accounts. Normally, the capital accounts will have credit balances, and the drawings accounts will have debit balances. Drawings accounts are debited when partners withdraw cash or other assets from the partnership for personal use.

## Income Ratios

As noted earlier, the partnership agreement should specify the basis for sharing net income or net loss. The following are typical income ratios.

1. A fixed ratio, expressed as a proportion (6:4), a percentage (70% and 30%), or a fraction (2/3 and 1/3) (see **Helpful Hint**).
2. A ratio based either on capital balances at the beginning of the year or on average capital balances during the year.
3. Salaries to partners and the remainder on a fixed ratio.
4. Interest on partners' capital balances and the remainder on a fixed ratio.
5. Salaries to partners, interest on partners' capital, and the remainder on a fixed ratio.

**HELPFUL HINT**
**A proportion such as 4:4:2 has a denominator of 10 (4 + 4 + 2). Thus, the basis for sharing net income or loss is 4/10, 4/10, and 2/10.**

The objective is to settle on a basis that will equitably reflect the partners' capital investment and service to the partnership.

A **fixed ratio** is easy to apply, and it may be an equitable basis in some circumstances. Assume, for example, that Hughes and Lane are partners. Each contributes the same amount of capital, but Hughes expects to work full-time in the partnership and Lane expects to work only half-time. Accordingly, the partners agree to a fixed ratio of 2/3 to Hughes and 1/3 to Lane.

A **ratio based on capital balances** may be appropriate when the funds invested in the partnership are considered the critical factor. Capital ratios may also be equitable when the partners hire a manager to run the business and do not plan to take an active role in daily operations.

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The three remaining ratios (items 3, 4, and 5) give specific recognition to differences among partners. These ratios provide salary allowances for time worked and interest allowances for capital invested. Then, the partnership allocates any remaining net income or net loss on a fixed ratio.

**Salaries to partners and interest on partners' capital are not expenses of the partnership.** Therefore, these items do not enter into the matching of expenses with revenues and the determination of net income or net loss. For a partnership, as for other entities, salaries and wages expense pertains to the cost of services performed by employees. Likewise, interest expense relates to the cost of borrowing from creditors. But partners, as owners, are not considered either **employees** or **creditors**. When the partnership agreement permits the partners to make monthly withdrawals of cash based on their "salary," the partnership debits these withdrawals to the partner's drawings account.

## Salaries, Interest, and Remainder on a Fixed Ratio

Under income ratio (5) in the list above, the partnership must apply salaries and interest **before** it allocates the remainder on the specified fixed ratio. **This is true even if the provisions exceed net income. It is also true even if the partnership has suffered a net loss for the year.** The partnership's income statement should show, below net income, detailed information concerning the division of net income or net loss.

To illustrate, assume that Sara King and Ray Lee are co-partners in the Kingslee Company. The partnership agreement provides for (1) salary allowances of $8,400 to King and $6,000 to Lee, (2) interest allowances of 10% on capital balances at the beginning of the year, and (3) the remaining income to be divided equally. Capital balances on January 1 were King $28,000, and Lee $24,000. In 2020, partnership net income is $22,000. The division of net income is as shown in **Illustration 12.5**.

**ILLUSTRATION 12.5**
**Division of net income schedule**

**Kingslee Company**
**Division of Net Income**
**For the Year Ended December 31, 2020**

Net income $ 22,000

**Division of Net Income**

| | Sara King | Ray Lee | Total |
|---|---|---|---|
| **Salary allowance** | $ 8,400 | $6,000 | $14,400 |
| **Interest allowance on partners' capital** | | | |
| Sara King ($28,000 × 10%) | 2,800 | | |
| Ray Lee ($24,000 × 10%) | | 2,400 | |
| Total interest allowance | | | 5,200 |
| Total salaries and interest | 11,200 | 8,400 | 19,600 |
| **Remaining income, $2,400** | | | |
| ($22,000 − $19,600) | | | |
| Sara King ($2,400 × 50%) | 1,200 | | |
| Ray Lee ($2,400 × 50%) | | 1,200 | |
| Total remainder | | | 2,400 |
| **Total division of net income** | **$12,400** | **$ 9,600** | **$ 22,000** |

Kingslee records the division of net income as follows.

| | | | |
|---|---|---|---|
| Dec. 31 | Income Summary | 22,000 | |
| | Sara King, Capital | | 12,400 |
| | Ray Lee, Capital | | 9,600 |
| | (To close net income to partners' capital) | | |

A = L + OE
−22,000
+12,000
+9,600

**Cash Flows**
no effect

Now let's look at a situation in which the salary and interest allowances **exceed** net income. Assume that Kingslee Company's net income is only $18,000. In this case, the salary

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and interest allowances will create a deficiency of $1,600 ($18,000 – $19,600). The computations of the allowances are the same as those in the preceding example. Beginning with total salaries and interest, we complete the division of net income as shown in **Illustration 12.6**.

**ILLUSTRATION 12.6**
**Division of net income—income deficiency**

| | Sara King | Ray Lee | Total |
|---|---|---|---|
| Total salaries and interest | $11,200 | $8,400 | $19,600 |
| **Remaining deficiency ($1,600)** | | | |
| ($18,000 – $19,600) | | | |
| Sara King ($1,600 × 50%) | (800) | | |
| Ray Lee ($1,600 × 50%) | | (800) | |
| Total remainder | | | (1,600) |
| **Total division** | **$10,400** | **$7,600** | **$18,000** |

## Partnership Financial Statements

The financial statements of a partnership are similar to those of a proprietorship. The differences are due to the number of owners involved. The income statement for a partnership is identical to the income statement for a proprietorship except for the division of net income, as shown earlier.

The owners' equity statement for a partnership is called the **partners' capital statement**. It explains the changes in each partner's capital account and in total partnership capital during the year. **Illustration 12.7** shows the partners' capital statement for Kingslee Company. It is based on the division of $22,000 of net income in Illustration 12.5. The statement includes assumed data for the additional investment and drawings. The partnership prepares the partners' capital statement from the income statement and the partners' capital and drawings accounts (see **Helpful Hint**).

**ILLUSTRATION 12.7**
**Partners' capital statement**

**Kingslee Company**
**Partners' Capital Statement**
**For the Year Ended December 31, 2020**

| | Sara King | Ray Lee | Total |
|---|---|---|---|
| Capital, January 1 | $ 28,000 | $ 24,000 | $ 52,000 |
| Add: Additional investment | 2,000 | | 2,000 |
| Net income | 12,400 | 9,600 | 22,000 |
| | 42,400 | 33,600 | 76,000 |
| Less: Drawings | 7,000 | 5,000 | 12,000 |
| **Capital, December 31** | **$35,400** | **$28,600** | **$64,000** |

**HELPFUL HINT**
As in a proprietorship, partners' capital may change due to (1) additional investment, (2) drawings, and (3) net income or net loss.

The balance sheet for a partnership is the same as for a proprietorship except for the owners' equity section. For a partnership, the balance sheet shows the capital balances of each partner. **Illustration 12.8** shows the owners' equity section for Kingslee Company.

**ILLUSTRATION 12.8**
**Owners' equity section of a partnership balance sheet**

**Kingslee Company**
**Balance Sheet (partial)**
**December 31, 2020**

| | | |
|---|---|---|
| Total liabilities (assumed amount) | | $115,000 |
| Owners' equity | | |
| Sara King, capital | $35,400 | |
| Ray Lee, capital | 28,600 | |
| Total owners' equity | | 64,000 |
| Total liabilities and owners' equity | | $179,000 |

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### DO IT! 2 | Division of Net Income

LeeMay Company reports net income of $57,000. The partnership agreement provides for salaries of $15,000 to L. Lee and $12,000 to R. May. They will share the remainder on a 60:40 basis (60% to Lee). L. Lee asks your help to divide the net income between the partners and to prepare the closing entry.

**ACTION PLAN**

- Compute net income exclusive of any salaries to partners and interest on partners' capital.
- Deduct salaries to partners from net income.
- Apply the partners' income ratios to the remaining net income.
- Prepare the closing entry distributing net income or net loss among the partners' capital accounts.

**Solution**

The division of net income is as follows.

| | L. Lee | R. May | Total |
|---|---|---|---|
| Salary allowance | $15,000 | $12,000 | $27,000 |
| Remaining income $30,000 ($57,000 − $27,000) | | | |
| L. Lee (60% × $30,000) | 18,000 | | |
| R. May (40% × $30,000) | | 12,000 | |
| Total remaining income | | | 30,000 |
| Total division of net income | $33,000 | $24,000 | $57,000 |

The closing entry for net income therefore is:

| | | |
|---|---|---|
| Income Summary | 57,000 | |
| L. Lee, Capital | | 33,000 |
| R. May, Capital | | 24,000 |
| (To close net income to partners' capital accounts) | | |

Related exercise material: **BE12.3, BE12.4, BE12.5, DO IT! 12.2, E12.4, and E12.5.**

# Liquidation of a Partnership

**LEARNING OBJECTIVE 3**

Explain how to account for the liquidation of a partnership.

**Liquidation** of a business involves selling the assets of the firm, paying liabilities, and distributing any remaining assets. Liquidation may result from the sale of the business by mutual agreement of the partners, from the death of a partner, or from bankruptcy. **Partnership liquidation** ends both the legal and economic life of the entity.

From an accounting standpoint, the partnership should complete the accounting cycle for the final operating period prior to liquidation. This includes preparing adjusting entries and financial statements. It also involves preparing closing entries and a post-closing trial balance. Thus, only balance sheet accounts should be open as the liquidation process begins.

In liquidation, the sale of noncash assets for cash is called **realization**. Any difference between book value and the cash proceeds is called the **gain or loss on realization**. To liquidate a partnership, it is necessary to:

1. Sell noncash assets for cash and recognize a gain or loss on realization.
2. Allocate gain/loss on realization to the partners based on their income ratios.
3. Pay partnership liabilities in cash.
4. Distribute remaining cash to partners on the basis of their **capital balances**.

**Each of the steps must be performed in sequence.** The partnership must pay creditors **before** partners receive any cash distributions. Also, an accounting entry must record each step (see Ethics Note).

**ETHICS NOTE**

The process of selling noncash assets and then distributing the cash reduces the likelihood of partner disputes. If instead the partnership distributes noncash assets to partners to liquidate the firm, the partners would need to agree on the value of the noncash assets, which can be very difficult to determine.

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When a partnership is liquidated, all partners may have credit balances in their capital accounts. This situation is called **no capital deficiency**. Or, one or more partners may have a debit balance in the capital account. This situation is termed a **capital deficiency**. To illustrate each of these conditions, assume that Ace Company is liquidated when its ledger shows the assets, liabilities, and owners' equity accounts presented in **Illustration 12.9**.

**ILLUSTRATION 12.9**
**Account balances prior to liquidation**

| Assets | | Liabilities and Owners' Equity | |
|---|---|---|---|
| Cash | $ 5,000 | Notes Payable | $15,000 |
| Accounts Receivable | 15,000 | Accounts Payable | 16,000 |
| Inventory | 18,000 | R. Arnet, Capital | 15,000 |
| Equipment | 35,000 | P. Carey, Capital | 17,800 |
| Accum. Depr.—Equipment | (8,000) | W. Eaton, Capital | 1,200 |
| | $65,000 | | $65,000 |

## No Capital Deficiency

The partners of Ace Company agree to liquidate the partnership on the following terms. (1) The partnership will sell its noncash assets to Jackson Enterprises for $75,000 cash. (2) The partnership will pay its partnership liabilities. The income ratios of the partners are 3:2:1, respectively (see **Helpful Hint**). The steps in the liquidation process are as follows.

**HELPFUL HINT**
**The income ratios' denominator for Ace Company is 6 (3 + 2 + 1).**

1. Ace sells the noncash assets (accounts receivable, inventory, and equipment) for $75,000. The book value of these assets is $60,000 ($15,000 + $18,000 + $35,000 − $8,000). Thus, Ace realizes a gain of $15,000 on the sale. The entry is:

**(1)**

| | | |
|---|---|---|
| Cash | 75,000 | |
| Accumulated Depreciation–Equipment | 8,000 | |
| Accounts Receivable | | 15,000 |
| Inventory | | 18,000 |
| Equipment | | 35,000 |
| Gain on Realization | | 15,000 |
| (To record realization of noncash assets) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +75,000 | | | | |
| +8,000 | | | | |
| −15,000 | | | | |
| −18,000 | | | | |
| −35,000 | | | | |
| | | | | +15,000 |

**Cash Flows**
+75,000

2. Ace allocates the $15,000 gain on realization to the partners based on their income ratios, which are 3:2:1. The entry is:

**(2)**

| | | |
|---|---|---|
| Gain on Realization | 15,000 | |
| R. Arnet, Capital ($15,000 × 3/6) | | 7,500 |
| P. Carey, Capital ($15,000 × 2/6) | | 5,000 |
| W. Eaton, Capital ($15,000 × 1/6) | | 2,500 |
| (To allocate gain to partners' capital accounts) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | −15,000 |
| | | | | +7,500 |
| | | | | +5,000 |
| | | | | +2,500 |

**Cash Flows**
no effect

3. Partnership liabilities consist of Notes Payable $15,000 and Accounts Payable $16,000. Ace pays creditors in full by a cash payment of $31,000. The entry is:

**(3)**

| | | |
|---|---|---|
| Notes Payable | 15,000 | |
| Accounts Payable | 16,000 | |
| Cash | | 31,000 |
| (To record payment of partnership liabilities) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| | | −15,000 | | |
| | | −16,000 | | |
| −31,000 | | | | |

**Cash Flows**
−31,000

4. Ace distributes the remaining cash to the partners on the basis of **their capital balances**. After posting the entries in the first three steps, all partnership accounts, including Gain

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on Realization, will have zero balances except for four accounts: Cash $49,000; R. Arnet, Capital $22,500; P. Carey, Capital $22,800; and W. Eaton, Capital $3,700, as shown in Illustration 12.10.

**ILLUSTRATION 12.10** **Ledger balances before distribution of cash**

| Cash | | | | R. Arnet, Capital | | | | P. Carey, Capital | | | | W. Eaton, Capital | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bal. | 5,000 | (3) | 31,000 | | Bal. | 15,000 | | | Bal. | 17,800 | | | Bal. | 1,200 | |
| (1) | 75,000 | | | | (2) | 7,500 | | | (2) | 5,000 | | | (2) | 2,500 | |
| **Bal.** | **49,000** | | | | **Bal.** | **22,500** | | | **Bal.** | **22,800** | | | **Bal.** | **3,700** | |

Ace records the distribution of cash as follows.

A = L + OE
−22,500
−22,800
−3,700
−49,000

**Cash Flows**
−49,000

**(4)**

| | | |
|---|---|---|
| R. Arnet, Capital | 22,500 | |
| P. Carey, Capital | 22,800 | |
| W. Eaton, Capital | 3,700 | |
| Cash | | 49,000 |
| (To record distribution of cash to partners) | | |

After posting this entry, all partnership accounts will have zero balances.

A word of caution: **Partnerships should not distribute remaining cash to partners on the basis of their income-sharing ratios.** On this basis, Arnet would receive three-sixths, or $24,500, which would produce an erroneous debit balance of $2,000. The income ratio is the proper basis for allocating net income or loss. **It is not a proper basis for making the final distribution of cash to the partners.**

**ALTERNATIVE TERMINOLOGY**

**The schedule of cash payments is sometimes called a *safe cash payments schedule*.**

## Schedule of Cash Payments

The **schedule of cash payments** shows the distribution of cash to the partners in a partnership liquidation (see **Alternative Terminology**). The schedule of cash payments is organized around the basic accounting equation. Illustration 12.11 shows the schedule for Ace Company. The numbers in parentheses in column B refer to the four required steps in the liquidation of a partnership. They also identify the accounting entries that Ace must make. The cash payments schedule is especially useful when the liquidation process extends over a period of time.

**ILLUSTRATION 12.11** **Schedule of cash payments, no capital deficiency**

ACE Company

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**Ace Company**
**Schedule of Cash Payments**

| Item | | Cash | + | Noncash Assets | = | Liabilities | + | R. Arnet, Capital | + | P. Carey, Capital | + | W. Eaton, Capital |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Balances before liquidation | | 5,000 | + | 60,000 | = | 31,000 | + | 15,000 | + | 17,800 | + | 1,200 |
| Sale of noncash assets and allocation of gain | (1)&(2) | 75,000 | + | (60,000) | = | | | 7,500 | + | 5,000 | + | 2,500 |
| New balances | | 80,000 | + | −0− | = | 31,000 | + | 22,500 | + | 22,800 | + | 3,700 |
| Pay liabilities | | (31,000) | | | = | (31,000) | | | | | | |
| New balances | (3) | 49,000 | + | −0− | = | −0− | + | 22,500 | + | 22,800 | + | 3,700 |
| Cash distribution to partners | (4) | (49,000) | | | = | | | (22,500) | + | (22,800) | + | (3,700) |
| Final balances | | −0− | | −0− | | −0− | | −0− | | −0− | | −0− |

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## DO IT! 3a | Partnership Liquidation—No Capital Deficiency

The partners of Grafton Company have decided to liquidate their business. Noncash assets were sold for $115,000. The income ratios of the partners Kale D., Croix D., and Marais K. are 2:3:3, respectively. Complete the following schedule of cash payments for Grafton Company.

**ACTION PLAN**

- First, sell the noncash assets and determine the gain.
- Allocate the gain to the partners based on their income ratios.
- Use cash to pay off liabilities.
- Distribute remaining cash on the basis of their capital balances.

Grafton Company

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Item | Cash | + | Noncash Assets | = | Liabilities | + | Kale D., Capital | + | Croix D., Capital | + | Marais K., Capital |
| 2 | Balances before liquidation | 10,000 | | 85,000 | | 40,000 | | 15,000 | | 35,000 | | 5,000 |
| 3 | Sale of noncash assets and allocation of gain | | | | | | | | | | | |
| 4 | New balances | | | | | | | | | | | |
| 5 | Pay liabilities | | | | | | | | | | | |
| 6 | New balances | | | | | | | | | | | |
| 7 | Cash distribution to partners | | | | | | | | | | | |
| 8 | Final balances | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |

### Solution

Grafton Company

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Item | Cash | + | Noncash Assets | = | Liabilities | + | Kale D., Capital | + | Croix D., Capital | + | Marais K., Capital |
| 2 | Balances before liquidation | 10,000 | | 85,000 | | 40,000 | | 15,000 | | 35,000 | | 5,000 |
| 3 | Sale of noncash assets and allocation of gain | 115,000 | | (85,000) | | | | 7,500[a] | | 11,250[b] | | 11,250[b] |
| 4 | New balances | 125,000 | | –0– | | 40,000 | | 22,500 | | 46,250 | | 16,250 |
| 5 | Pay liabilities | (40,000) | | | | (40,000) | | | | | | |
| 6 | New balances | 85,000 | | –0– | | –0– | | 22,500 | | 46,250 | | 16,250 |
| 7 | Cash distribution to partners | (85,000) | | | | | | (22,500) | | (46,250) | | (16,250) |
| 8 | Final balances | –0– | | –0– | | –0– | | –0– | | –0– | | –0– |
| 9 | | | | | | | | | | | | |
| 10 | [a]30,000 x 2/8 | | | | | | | | | | | |
| 11 | [b]30,000 x 3/8 | | | | | | | | | | | |

Related exercise material: **BE12.6, DO IT! 12.3a, E12.8, and E12.9.**

# Capital Deficiency

A capital deficiency may result from recurring net losses, excessive drawings, or losses from realization suffered during liquidation. To illustrate, assume that Ace Company is on the brink of bankruptcy. The partners decide to liquidate by having a "going-out-of-business" sale. They sell merchandise at substantial discounts, and sell the equipment at auction. Cash proceeds from these sales and collections from customers total only $42,000. Thus, the loss from liquidation is $18,000 ($60,000 – $42,000). The steps in the liquidation process are as follows.

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**1.** The entry for the realization of noncash assets is:

| A | = | L | + | OE |
|---|---|---|---|---|
| +42,000 | | | | |
| +8,000 | | | | |
| | | | | −18,000 |
| −15,000 | | | | |
| −18,000 | | | | |
| −35,000 | | | | |

**Cash Flows**
+42,000

**(1)**

| | | |
|---|---|---|
| Cash | 42,000 | |
| Accumulated Depreciation—Equipment | 8,000 | |
| Loss on Realization | 18,000 | |
| Accounts Receivable | | 15,000 |
| Inventory | | 18,000 |
| Equipment | | 35,000 |
| (To record realization of noncash assets) | | |

**2.** Ace allocates the loss on realization to the partners on the basis of their income ratios. The entry is:

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | −9,000 |
| | | | | −6,000 |
| | | | | −3,000 |
| | | | | +18,000 |

**Cash Flows**
no effect

**(2)**

| | | |
|---|---|---|
| R. Arnet, Capital ($18,000 × 3/6) | 9,000 | |
| P. Carey, Capital ($18,000 × 2/6) | 6,000 | |
| W. Eaton, Capital ($18,000 × 1/6) | 3,000 | |
| Loss on Realization | | 18,000 |
| (To allocate loss on realization to partners) | | |

**3.** Ace pays the partnership liabilities. This entry is the same as the previous one.

| A | = | L | + | OE |
|---|---|---|---|---|
| | | −15,000 | | |
| | | −16,000 | | |
| −31,000 | | | | |

**Cash Flows**
−31,000

**(3)**

| | | |
|---|---|---|
| Notes Payable | 15,000 | |
| Accounts Payable | 16,000 | |
| Cash | | 31,000 |
| (To record payment of partnership liabilities) | | |

**4.** After posting the three entries, two accounts will have debit balances—Cash $16,000 and W. Eaton, Capital $1,800. Two accounts will have credit balances—R. Arnet, Capital $6,000 and P. Carey, Capital $11,800. **Illustration 12.12** shows all four accounts.

**ILLUSTRATION 12.12** **Ledger balances before distribution of cash**

| Cash | | | | R. Arnet, Capital | | | | P. Carey, Capital | | | | W. Eaton, Capital | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bal. | 5,000 | (3) | 31,000 | (2) | 9,000 | Bal. | 15,000 | (2) | 6,000 | Bal. | 17,800 | (2) | 3,000 | Bal. | 1,200 |
| (1) | 42,000 | | | | | **Bal.** | **6,000** | | | **Bal.** | **11,800** | **Bal.** | **1,800** | | |
| **Bal.** | **16,000** | | | | | | | | | | | | | | |

Eaton has a capital deficiency of $1,800 and so owes the partnership $1,800. Arnet and Carey have a legally enforceable claim for that amount against Eaton's personal assets. Note that the distribution of cash is still made on the basis of capital balances. But, the amount will vary depending on how Eaton settles the deficiency. Two alternatives are presented in the following sections.

## Payment of Deficiency

If the partner with the capital deficiency pays the amount owed the partnership, the deficiency is eliminated. To illustrate, assume that Eaton pays $1,800 to the partnership. The entry is:

| A | = | L | + | OE |
|---|---|---|---|---|
| +1,800 | | | | |
| | | | | +1,800 |

**Cash Flows**
+1,800

**(a)**

| | | |
|---|---|---|
| Cash | 1,800 | |
| W. Eaton, Capital | | 1,800 |
| (To record payment of capital deficiency by Eaton) | | |

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After posting this entry, account balances are as shown in Illustration 12.13.

**ILLUSTRATION 12.13** **Ledger balances after paying capital deficiency**

| Cash | | | | R. Arnet, Capital | | | | P. Carey, Capital | | | | W. Eaton, Capital | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bal. | 5,000 | (3) | 31,000 | (2) | 9,000 | Bal. | 15,000 | (2) | 6,000 | Bal. | 17,800 | (2) | 3,000 | Bal. | 1,200 |
| (1) | 42,000 | | | | | **Bal.** | **6,000** | | | **Bal.** | **11,800** | | | Bal. | 1,800 |
| (a) | 1,800 | | | | | | | | | | | | | **Bal.** | **–0–** |
| **Bal.** | **17,800** | | | | | | | | | | | | | | |

The cash balance of $17,800 is now equal to the credit balances in the capital accounts (Arnet $6,000 + Carey $11,800). Ace now distributes cash on the basis of these balances. The entry is:

| | | |
|---|---|---|
| R. Arnet, Capital | 6,000 | |
| P. Carey, Capital | 11,800 | |
| Cash | | 17,800 |
| (To record distribution of cash to the partners) | | |

A = L + OE
−6,000
−11,800
−17,800

**Cash Flows**
−17,800

After posting this entry, all accounts will have zero balances.

## Nonpayment of Deficiency

If a partner with a capital deficiency is unable to pay the amount owed to the partnership, the partners with credit balances must absorb the loss. The partnership allocates the loss on the basis of the income ratios that exist between the partners with credit balances.

The income ratios of Arnet and Carey are 3:2, or 3/5 and 2/5, respectively (see Helpful Hint). Thus, Ace would make the following entry to remove Eaton's capital deficiency.

**HELPFUL HINT**

**The ratios with all three partners were 3:2:1 and the denominator was therefore 6. Leaving out Eaton, the denominator changes to 5 (3 + 2).**

**(a)**

| | | |
|---|---|---|
| R. Arnet, Capital ($1,800 × 3/5) | 1,080 | |
| P. Carey, Capital ($1,800 × 2/5) | 720 | |
| W. Eaton, Capital | | 1,800 |
| (To record write-off of capital deficiency) | | |

A = L + OE
−1,080
−720
+1,800

**Cash Flows**
no effect

After posting this entry, the cash and capital accounts will have the balances shown in Illustration 12.14.

**ILLUSTRATION 12.14** **Ledger balances after nonpayment of capital deficiency**

| Cash | | | | R. Arnet, Capital | | | | P. Carey, Capital | | | | W. Eaton, Capital | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bal. | 5,000 | (3) | 31,000 | (2) | 9,000 | Bal. | 15,000 | (2) | 6,000 | Bal. | 17,800 | (2) | 3,000 | Bal. | 1,200 |
| (1) | 42,000 | | | (a) | 1,080 | | | (a) | 720 | | | | | (a) | 1,800 |
| **Bal.** | **16,000** | | | | | **Bal.** | **4,920** | | | **Bal.** | **11,080** | | | **Bal.** | **–0–** |

The cash balance ($16,000) now equals the sum of the credit balances in the capital accounts (Arnet $4,920 + Carey $11,080). Ace records the distribution of cash as:

| | | |
|---|---|---|
| R. Arnet, Capital | 4,920 | |
| P. Carey, Capital | 11,080 | |
| Cash | | 16,000 |
| (To record distribution of cash to the partners) | | |

A = L + OE
−4,920
−11,080
−16,000

**Cash Flows**
−16,000

After posting this entry, all accounts will have zero balances.

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### DO IT! 3b | Partnership Liquidation—Capital Deficiency

Kessington Company wishes to liquidate the firm by distributing the company's cash to the three partners. Prior to the distribution of cash, the company's balances are Cash $45,000; Rollings, Capital (Cr.) $28,000; Havens, Capital (Dr.) $12,000; and Ostergard, Capital (Cr.) $29,000. The income ratios of the three partners are 4:4:2, respectively. Prepare the entry to record the absorption of Havens' capital deficiency by the other partners and the distribution of cash to the partners with credit balances.

**ACTION PLAN**

- Allocate any unpaid capital deficiency to the partners with credit balances, based on their income ratios.
- After distribution of the deficiency, distribute cash to the remaining partners, based on their capital balances.

**Solution**

| | | |
|---|---|---|
| Rollings, Capital ($12,000 × 4/6) | 8,000 | |
| Ostergard, Capital ($12,000 × 2/6) | 4,000 | |
| Havens, Capital | | 12,000 |
| (To record write-off of capital deficiency) | | |
| Rollings, Capital ($28,000 − $8,000) | 20,000 | |
| Ostergard, Capital ($29,000 − $4,000) | 25,000 | |
| Cash | | 45,000 |
| (To record distribution of cash to partners) | | |

Related exercise material: **DO IT! 12.3b and E12.10.**

Appendix 12A

# Admissions and Withdrawals of Partners

**LEARNING OBJECTIVE *4**

Prepare journal entries when a partner is either admitted or withdraws.

The chapter explained how the basic accounting for a partnership works. We now look at how to account for a common occurrence in partnerships—the addition or withdrawal of a partner.

## Admission of a Partner

The admission of a new partner results in the **legal dissolution** of the existing partnership and the beginning of a new one. From an economic standpoint, however, the admission of a new partner (or partners) may be of minor significance in the continuity of the business. For example, in large public accounting or law firms, partners are admitted annually without any change in operating policies. **To recognize the economic effects, it is necessary only to open a capital account for each new partner.** In the entries illustrated in this appendix, we assume that the accounting records of the predecessor firm will continue to be used by the new partnership.

A new partner may be admitted either by (1) purchasing the interest of one or more existing partners or (2) investing assets in the partnership. The former affects only the capital accounts of the partners who are parties to the transaction. The latter increases both net assets and total capital of the partnership.

**HELPFUL HINT**

**In a purchase of an interest, the partnership is not a participant in the transaction. In this transaction, the new partner contributes *no* cash to the partnership.**

### Purchase of a Partner's Interest

The **admission** of a partner **by purchase of an interest** is a personal transaction between one or more existing partners and the new partner. Each party acts as an individual separate from the partnership entity. The individuals involved negotiate the price paid. It may be equal to or different from the capital equity acquired. The purchase price passes directly from the new partner to the partners who are giving up part or all of their ownership claims (see **Helpful Hint**).

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Any money or other consideration exchanged is the personal property of the participants and **not** the property of the partnership. Upon purchase of an interest, the new partner acquires each selling partner's capital interest and income ratio.

Accounting for the purchase of an interest is straightforward. The partnership records only the changes in partners' capital. **Partners' capital accounts are debited for any ownership claims sold.** At the same time, the new partner's capital account is credited for the capital equity purchased. Total assets, total liabilities, and total capital remain unchanged, as do all individual asset and liability accounts.

To illustrate, assume that L. Carson agrees to pay $10,000 each to C. Ames and D. Barker for $33^1/_3\%$ (one-third) of their interest in the Ames–Barker partnership. At the time of the admission of Carson, each partner has a $30,000 capital balance. Both partners, therefore, give up $10,000 of their capital equity. The entry to record the admission of Carson is:

| | | |
|---|---|---|
| C. Ames, Capital | 10,000 | |
| D. Barker, Capital | 10,000 | |
| L. Carson, Capital | | 20,000 |
| (To record admission of Carson by purchase) | | |

**Illustration 12A.1** shows the effect of this transaction on net assets and partners' capital.

**ILLUSTRATION 12A.1** **Ledger balances after purchase of a partner's interest**

| Net Assets | | C. Ames, Capital | | D. Barker, Capital | | L. Carson, Capital | |
|---|---|---|---|---|---|---|---|
| 60,000 | | **10,000** | 30,000 | **10,000** | 30,000 | | **20,000** |
| | | | Bal. 20,000 | | Bal. 20,000 | | |

Note that net assets remain unchanged at $60,000, and each partner has a $20,000 capital balance. Ames and Barker continue as partners in the firm, but the capital interest of each has changed. The cash paid by Carson goes directly to the individual partners and not to the partnership.

**Regardless of the amount paid by Carson for the one-third interest, the entry is exactly the same.** If Carson pays $12,000 each to Ames and Barker for one-third of the partnership, the partnership still makes the entry shown above.

## Investment of Assets in a Partnership

The admission of a partner by an investment of assets is a transaction between the new partner and the partnership. Often referred to simply as **admission by investment**, the transaction **increases both the net assets and total capital of the partnership**.

Assume, for example, that instead of purchasing an interest, Carson invests $30,000 in cash in the Ames-Barker partnership for a $33^1/_3\%$ capital interest. In such a case, the entry is:

| | | |
|---|---|---|
| Cash | 30,000 | |
| L. Carson, Capital | | 30,000 |
| (To record admission of Carson by investment) | | |

**Illustration 12A.2** shows the effects of this transaction on the partnership accounts.

**ILLUSTRATION 12A.2** **Ledger balances after investment of assets**

| Net Assets | | C. Ames, Capital | D. Barker, Capital | L. Carson, Capital |
|---|---|---|---|---|
| 60,000 | | 30,000 | 30,000 | **30,000** |
| **30,000** | | | | |
| Bal. 90,000 | | | | |

Note that both net assets and total capital have increased by $30,000.

Remember that Carson's one-third capital interest might not result in a one-third income ratio. The new partnership agreement should specify Carson's income ratio, and it may or may not be equal to the one-third capital interest.

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The comparison of the net assets and capital balances in **Illustration 12A.3** shows the different effects of the purchase of an interest and admission by investment.

**ILLUSTRATION 12A.3**
**Comparison of purchase of an interest and admission by investment**

| Purchase of an Interest | | Admission by Investment | |
|---|---|---|---|
| **Net assets** | **$60,000** | **Net assets** | **$90,000** |
| Capital | | Capital | |
| C. Ames | $20,000 | C. Ames | $30,000 |
| D. Barker | 20,000 | D. Barker | 30,000 |
| L. Carson | 20,000 | L. Carson | 30,000 |
| **Total capital** | **$60,000** | **Total capital** | **$90,000** |

When a new partner purchases an interest, the total net assets and total capital of the partnership **do not change**. When a partner is admitted by investment, both the total net assets and the total capital **change** by the amount of the new investment.

In the case of admission by investment, further complications occur when the new partner's investment differs from the capital equity acquired. When those amounts are not the same, the difference is considered a **bonus** either to (1) the existing (old) partners or (2) the new partner.

**Bonus to Old Partners.** For both personal and business reasons, the existing partners may be unwilling to admit a new partner without receiving a bonus. In an established firm, existing partners may insist on a bonus as compensation for the work they have put into the company over the years. Two accounting factors underlie the business reason. First, total partners' capital equals the **book value** of the recorded net assets of the partnership. When the new partner is admitted, the fair values of assets such as land and buildings may be higher than their book values. The bonus will help make up the difference between fair value and book value. Second, when the partnership has been profitable, goodwill may exist. But, the partnership balance sheet does not report goodwill. The new partner is usually willing to pay the bonus to become a partner.

A bonus to old partners results when the new partner's investment in the firm is greater than the capital credit on the date of admittance. The bonus results in **an increase in the capital balances of the old partners**. **The partnership allocates the bonus to them on the basis of their income ratios before the admission of the new partner.** To illustrate, assume that the Bart-Cohen partnership, owned by Sam Bart and Tom Cohen, has total capital of $120,000. Lea Eden acquires a 25% ownership (capital) interest in the partnership by making a cash investment of $80,000. The procedure for determining Eden's capital credit and the bonus to the old partners is as follows.

1. **Determine the total capital of the new partnership.** Add the new partner's investment to the total capital of the old partnership. In this case, the total capital of the new firm is $200,000, computed as follows.

| | |
|---|---|
| Total capital of existing partnership | $120,000 |
| Investment by new partner, Eden | 80,000 |
| Total capital of new partnership | $200,000 |

2. **Determine the new partner's capital credit.** Multiply the total capital of the new partnership by the new partner's ownership interest. Eden's capital credit is $50,000 ($200,000 × 25%).
3. **Determine the amount of bonus.** Subtract the new partner's capital credit from the new partner's investment. The bonus in this case is $30,000 ($80,000 – $50,000).
4. **Allocate the bonus to the old partners on the basis of their income ratios.** Assuming the ratios are Bart 60%, and Cohen 40%, the allocation is Bart $18,000 ($30,000 × 60%) and Cohen $12,000 ($30,000 × 40%).

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The entry to record the admission of Eden is:

| | | |
|---|---|---|
| Cash | 80,000 | |
| Sam Bart, Capital | | 18,000 |
| Tom Cohen, Capital | | 12,000 |
| Lea Eden, Capital | | 50,000 |
| (To record admission of Eden and bonus to old partners) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +80,000 | | | | |
| | | | | +18,000 |
| | | | | +12,000 |
| | | | | +50,000 |

Cash Flows +80,000

**Bonus to New Partner.** A bonus to a new partner results when the new partner's investment in the firm is less than his or her capital credit. This may occur when the new partner possesses special attributes that the partnership wants. For example, the new partner may be able to supply cash that the firm needs for expansion or to meet maturing debts. Or the new partner may be a recognized expert in a relevant field. Thus, an engineering firm may be willing to give a renowned engineer a bonus to join the firm. The partners of a restaurant may offer a bonus to a sports celebrity in order to add the athlete's name to the partnership. A bonus to a new partner may also result when recorded book values on the partnership books are higher than their fair values.

A bonus to a new partner results in a **decrease in the capital balances of the old partners**. **The amount of the decrease for each partner is based on the income ratios before the admission of the new partner.** To illustrate, assume that Lea Eden invests $20,000 in cash for a 25% ownership interest in the Bart–Cohen partnership. **Illustration 12A.4** shows the computations for Eden's capital credit and the bonus, using the four procedures described in the preceding section.

**ILLUSTRATION 12A.4**
**Computation of capital credit and bonus to new partner**

| | | |
|---|---|---|
| 1. Total capital of Bart–Cohen partnership | | $120,000 |
| Investment by new partner, Eden | | 20,000 |
| Total capital of new partnership | | $140,000 |
| 2. **Eden's capital credit** (25% × $140,000) | | **$ 35,000** |
| 3. **Bonus to Eden** ($35,000 – $20,000) | | **$ 15,000** |
| 4. Allocation of bonus to old partners: | | |
| Bart ($15,000 × 60%) | $9,000 | |
| Cohen ($15,000 × 40%) | 6,000 | $ 15,000 |

The partnership records the admission of Eden as follows.

| | | |
|---|---|---|
| Cash | 20,000 | |
| Sam Bart, Capital | 9,000 | |
| Tom Cohen, Capital | 6,000 | |
| Lea Eden, Capital | | 35,000 |
| (To record Eden's admission and bonus) | | |

| A | = | L | + | OE |
|---|---|---|---|---|
| +20,000 | | | | |
| | | | | –9,000 |
| | | | | –6,000 |
| | | | | +35,000 |

Cash Flows +20,000

## Withdrawal of a Partner

Now let's look at the opposite situation–the withdrawal of a partner. A partner may withdraw from a partnership **voluntarily**, by selling his or her equity in the firm. Or, he or she may withdraw **involuntarily**, by reaching mandatory retirement age or by dying. The withdrawal of a partner, like the admission of a partner, legally dissolves the partnership. The legal effects may be recognized by dissolving the firm. However, it is customary to record only the economic effects of the partner's withdrawal, while the firm continues to operate and reorganizes itself legally.

As indicated earlier, the partnership agreement should specify the terms of withdrawal. The withdrawal of a partner may be accomplished by (1) payment from partners' personal assets or (2) payment from partnership assets. The former affects only the partners' capital accounts. The latter decreases total net assets and total capital of the partnership.

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## Payment from Partners' Personal Assets

**Withdrawal by payment from partners' personal assets** is a personal transaction between the partners. **It is the direct opposite of admitting a new partner who purchases a partner's interest.** The remaining partners pay the retiring partner directly from their personal assets. **Partnership assets are not involved in any way, and total capital does not change.** The effect on the partnership is limited to changes in the partners' capital balances.

To illustrate, assume that partners Morz, Nead, and Odom have capital balances of $25,000, $15,000, and $10,000, respectively. Morz and Nead agree to buy out Odom's interest. Each of them agrees to pay Odom $8,000 in exchange for one-half of Odom's total interest of $10,000. The entry to record the withdrawal is:

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | –10,000 |
| | | | | +5,000 |
| | | | | +5,000 |

**Cash Flows**
no effect

| | | |
|---|---|---|
| J. Odom, Capital | 10,000 | |
| A. Morz, Capital | | 5,000 |
| M. Nead, Capital | | 5,000 |
| (To record purchase of Odom's interest) | | |

The effect of this entry on the partnership accounts is shown in **Illustration 12A.5**.

**ILLUSTRATION 12A.5** **Ledger balances after payment from partners' personal assets**

| Net Assets | | A. Morz, Capital | | M. Nead, Capital | | J. Odom, Capital | |
|---|---|---|---|---|---|---|---|
| 50,000 | | | 25,000 | | 15,000 | **10,000** | 10,000 |
| | | | **5,000** | | **5,000** | | Bal. –0– |
| | | | Bal. 30,000 | | Bal. 20,000 | | |

Note that net assets and total capital remain the same at $50,000.

What about the $16,000 paid to Odom? You've probably noted that it is not recorded. The entry debited Odom's capital only for $10,000, not for the $16,000 that she received. Similarly, both Morz and Nead credit their capital accounts for only $5,000, not for the $8,000 they each paid.

After Odom's withdrawal, Morz and Nead will share net income or net loss equally unless they indicate another income ratio in the partnership agreement.

## Payment from Partnership Assets

**Withdrawal by payment from partnership assets** is a transaction that involves the partnership. **Both partnership net assets and total capital decrease as a result.** Using partnership assets to pay for a withdrawing partner's interest is the **reverse** of admitting a partner through the investment of assets in the partnership.

Many partnership agreements provide that the amount paid should be based on the fair value of the assets at the time of the partner's withdrawal. When this basis is required, some maintain that any differences between recorded asset balances and their fair values should be (1) recorded by an adjusting entry, and (2) allocated to all partners on the basis of their income ratios. This position has serious flaws. Recording the revaluations violates the historical cost principle, which requires that assets be stated at original cost. It also violates the going-concern assumption, which assumes the entity will continue indefinitely. The terms of the partnership contract should not dictate the accounting for this event.

In accounting for a withdrawal by payment from partnership assets, the partnership should not record asset revaluations. Instead, it should consider any difference between the amount paid and the withdrawing partner's capital balance as **a bonus** to the retiring partner or to the remaining partners.

**Bonus to Retiring Partner.** A partnership may pay a bonus to a retiring partner when:

1. The fair value of partnership assets is more than their book value,
2. There is unrecorded goodwill resulting from the partnership's superior earnings record, or
3. The remaining partners are eager to remove the partner from the firm.

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**The partnership deducts the bonus from the remaining partners' capital balances on the basis of their income ratios at the time of the withdrawal.**

To illustrate, assume that the following capital balances exist in the RST partnership: Roman $50,000, Sand $30,000, and Terk $20,000. The partners share income in the ratio of 3:2:1, respectively. Terk retires from the partnership and receives a cash payment of $25,000 from the firm. The procedure for determining the bonus to the retiring partner and the allocation of the bonus to the remaining partners is as follows.

1. **Determine the amount of the bonus.** Subtract the retiring partner's capital balance from the cash paid by the partnership. The bonus in this case is $5,000 ($25,000 – $20,000).
2. **Allocate the bonus to the remaining partners on the basis of their income ratios.** The ratios of Roman and Sand are 3:2. Thus, the allocation of the $5,000 bonus is: Roman $3,000 ($5,000 × 3/5) and Sand $2,000 ($5,000 × 2/5).

The partnership records the withdrawal of Terk as follows (see **Helpful Hint**).

| | | |
|---|---|---|
| B. Terk, Capital | 20,000 | |
| F. Roman, Capital | 3,000 | |
| D. Sand, Capital | 2,000 | |
| Cash | | 25,000 |
| (To record withdrawal of and bonus to Terk) | | |

**HELPFUL HINT**
Compare this entry to the next one.

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | –20,000 |
| | | | | –3,000 |
| –25,000 | | | | –2,000 |

**Cash Flows**
–25,000

The remaining partners, Roman and Sand, will recover the bonus given to Terk as the partnership sells or uses the undervalued assets.

**Bonus to Remaining Partners.** The retiring partner may give a bonus to the remaining partners when:

1. Recorded assets are overvalued.
2. The partnership has a poor earnings record.
3. The partner is eager to leave the partnership.

In such cases, the cash paid to the retiring partner will be less than the retiring partner's capital balance. **The partnership allocates (credits) the bonus to the capital accounts of the remaining partners on the basis of their income ratios.**

To illustrate, assume instead that the partnership pays Terk only $16,000 for her $20,000 equity when she withdraws from the partnership. In that case:

1. The bonus to remaining partners is $4,000 ($20,000 – $16,000).
2. The allocation of the $4,000 bonus is Roman $2,400 ($4,000 × 3/5) and Sand $1,600 ($4,000 × 2/5).

Under these circumstances, the entry to record the withdrawal is as follows (see **Helpful Hint**).

| | | |
|---|---|---|
| B. Terk, Capital | 20,000 | |
| F. Roman, Capital | | 2,400 |
| D. Sand, Capital | | 1,600 |
| Cash | | 16,000 |
| (To record withdrawal of Terk and bonus to remaining partners) | | |

**HELPFUL HINT**
Compare this entry to the previous one.

| A | = | L | + | OE |
|---|---|---|---|---|
| | | | | –20,000 |
| | | | | +2,400 |
| | | | | +1,600 |
| –16,000 | | | | |

**Cash Flows**
–16,000

Note that if Sand had withdrawn from the partnership, Roman and Terk would divide any bonus on the basis of their income ratio, which is 3:1 or 75% and 25%.

## Death of a Partner

The death of a partner dissolves the partnership. However, partnership agreements usually contain a provision for the surviving partners to continue operations. When a partner dies, it usually is necessary to determine the partner's equity at the date of death. This is done by (1)

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determining the net income or loss for the year to date, (2) closing the books, and (3) preparing financial statements. The partnership agreement may also require an independent audit and a revaluation of assets.

The surviving partners may agree to purchase the deceased partner's equity from their personal assets. Or they may use partnership assets to settle with the deceased partner's estate. In both instances, the entries to record the withdrawal of the partner are similar to those presented earlier.

To facilitate payment from partnership assets, some partnerships obtain life insurance policies on each partner, with the partnership named as the beneficiary. The partnership then uses the proceeds from the insurance policy on the deceased partner to settle with the estate.

# Review and Practice

## Learning Objectives Review

### 1 Discuss and account for the formation of a partnership.

The principal characteristics of a partnership are (a) association of individuals, (b) mutual agency, (c) limited life, (d) unlimited liability, and (e) co-ownership of property. When formed, a partnership records each partner's initial investment at the fair value of the assets at the date of their transfer to the partnership.

### 2 Explain how to account for net income or net loss of a partnership.

Partnerships divide net income or net loss on the basis of the income ratio, which may be (a) a fixed ratio, (b) a ratio based on beginning or average capital balances, (c) salaries to partners and the remainder on a fixed ratio, (d) interest on partners' capital and the remainder on a fixed ratio, and (e) salaries to partners, interest on partners' capital, and the remainder on a fixed ratio.

The financial statements of a partnership are similar to those of a proprietorship. The principal differences are as follows. (a) The partnership shows the division of net income on the income statement. (b) The owners' equity statement is called a partners' capital statement. (c) The partnership reports each partner's capital on the balance sheet.

### 3 Explain how to account for the liquidation of a partnership.

When a partnership is liquidated, it is necessary to record the (a) sale of noncash assets, (b) allocation of the gain or loss on realization, (c) payment of partnership liabilities, and (d) distribution of cash to the partners on the basis of their capital balances.

### *4 Prepare journal entries when a partner is either admitted or withdraws.

The entry to record the admittance of a new partner by purchase of a partner's interest affects only partners' capital accounts. The entries to record the admittance by investment of assets in the partnership (a) increase both net assets and total capital and (b) may result in recognition of a bonus to either the old partners or the new partner.

The entry to record a withdrawal from the firm when the partners pay from their personal assets affects only partners' capital accounts. The entry to record a withdrawal when payment is made from partnership assets (a) decreases net assets and total capital and (b) may result in recognizing a bonus either to the retiring partner or the remaining partners.

## Glossary Review

***Admission by investment** Admission of a partner by investing assets in the partnership, causing both partnership net assets and total capital to increase. (p. 12-19).

***Admission by purchase of an interest** Admission of a partner in a personal transaction between one or more existing partners and the new partner; does not change total partnership assets or total capital. (p. 12-18).

**Capital deficiency** A debit balance in a partner's capital account after allocation of gain or loss. (p. 12-13).

**General partners** Partners who have unlimited liability for the debts of the firm. (p. 12-4).

**Income ratio** The basis for dividing net income and net loss in a partnership. (p. 12-8).

**Limited liability company** A form of business organization, usually classified as a partnership for tax purposes and usually with limited life, in which partners, who are called members, have limited liability. (p. 12-4).

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**Limited liability partnership** A partnership of professionals in which partners are given limited liability and the public is protected from malpractice by insurance carried by the partnership. (p. 12-4).

**Limited partners** Partners whose liability for the debts of the firm is limited to their investment in the firm. (p. 12-4).

**Limited partnership** A partnership in which one or more general partners have unlimited liability and one or more partners have limited liability for the obligations of the firm. (p. 12-4).

**No capital deficiency** All partners have credit balances after allocation of gain or loss. (p. 12-13).

**Partners' capital statement** The owners' equity statement for a partnership which shows the changes in each partner's capital account and in total partnership capital during the year. (p. 12-11).

**Partnership** An association of two or more persons to carry on as co-owners of a business for profit. (p. 12-2).

**Partnership agreement** A written contract expressing the voluntary agreement of two or more individuals in a partnership. (p. 12-6).

**Partnership dissolution** A change in partners due to withdrawal or admission, which does not necessarily terminate the business. (p. 12-3).

**Partnership liquidation** An event that ends both the legal and economic life of a partnership. (p. 12-12).

**Schedule of cash payments** A schedule showing the distribution of cash to the partners in a partnership liquidation. (p. 12-14).

***Withdrawal by payment from partners' personal assets** Withdrawal of a partner in a personal transaction between partners; does not change total partnership assets or total capital. (p. 12-22).

***Withdrawal by payment from partnership assets** Withdrawal of a partner in a transaction involving the partnership, causing both partnership net assets and total capital to decrease. (p. 12-22).

## Practice Multiple-Choice Questions

**1. (LO 1)** Which of the following is **not** a characteristic of a partnership?

**a.** Taxable entity. **c.** Mutual agency.
**b.** Co-ownership of property. **d.** Limited life.

**2. (LO 1)** A partnership agreement should include each of the following **except:**

**a.** names and capital contributions of partners.
**b.** rights and duties of partners as well as basis for sharing net income or loss.
**c.** basis for splitting partnership income taxes.
**d.** provision for withdrawal of assets.

**3. (LO 1)** The advantages of a partnership do **not** include:

**a.** ease of formation.
**b.** unlimited liability.
**c.** freedom from government regulation.
**d.** ease of decision-making.

**4. (LO 1)** Upon formation of a partnership, each partner's initial investment of assets should be recorded at their:

**a.** book values. **c.** fair values.
**b.** cost. **d.** appraised values.

**5. (LO 1)** Ben and Sam Jenkins formed a partnership. Ben contributed $8,000 cash and a used truck that originally cost $35,000 and had accumulated depreciation of $15,000. The truck's fair value was $16,000. Sam, a builder, contributed a new storage garage. His cost of construction was $40,000. The garage has a fair value of $55,000. What is the combined total capital that would be recorded on the partnership books for the two partners?

**a.** $79,000. **c.** $75,000.
**b.** $60,000. **d.** $90,000.

**6. (LO 2)** The NBC Company reports net income of $60,000. If partners N, B, and C have an income ratio of 50%, 30%, and 20%, respectively, C's share of the net income is:

**a.** $30,000. **c.** $18,000.
**b.** $12,000. **d.** No correct answer is given.

**7. (LO 2)** Using the data in Practice Multiple-Choice Question 6, what is B's share of net income if the percentages are applicable after each partner receives a $10,000 salary allowance?

**a.** $12,000. **c.** $19,000.
**b.** $20,000. **d.** $21,000.

**8. (LO 2)** To close a partner's drawings account, an entry must be made that:

**a.** debits that partner's drawings account and credits Income Summary.
**b.** debits that partner's drawings account and credits that partner's capital account.
**c.** credits that partner's drawings account and debits that partner's capital account.
**d.** credits that partner's drawings account and debits the firm's dividend account.

**9. (LO 2)** Which of the following statements about partnership financial statements is **true**?

**a.** Details of the distribution of net income are shown in the owners' equity statement.
**b.** The distribution of net income is shown on the balance sheet.
**c.** Only the total of all partner capital balances is shown in the balance sheet.
**d.** The owners' equity statement is called the partners' capital statement.

**10. (LO 3)** In the liquidation of a partnership, it is necessary to (1) distribute cash to the partners, (2) sell noncash assets, (3) allocate any gain or loss on realization to the partners, and (4) pay liabilities. These steps should be performed in the following order:

**a.** (2), (3), (4), (1).
**b.** (2), (3), (1), (4).
**c.** (3), (2), (1), (4).
**d.** (3), (2), (4), (1).

*Use the following account balance information for Creekville Partnership to answer Practice Multiple-Choice Questions 11 and 12. Income ratios are 2:4:4 for Harriet, Mike, and Elly, respectively.*

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| Assets | | Liabilities and Owners' Equity | |
|---|---|---|---|
| Cash | $ 9,000 | Accounts payable | $ 21,000 |
| Accounts receivable | 22,000 | Harriet, capital | 23,000 |
| Inventory | 73,000 | Mike, capital | 8,000 |
| | | Elly, capital | 52,000 |
| | $104,000 | | $104,000 |

**11.** **(LO 3)** Assume that as part of liquidation proceedings, Creekville sells its noncash assets for $85,000. The amount of cash that would ultimately be distributed to Elly would be:

**a.** $52,000. **c.** $34,000.
**b.** $48,000. **d.** $86,000.

**12.** **(LO 3)** Assume that as part of liquidation proceedings, Creekville sells its noncash assets for $60,000. As a result, one of the partners has a capital deficiency which that partner decides not to repay. The amount of cash that would ultimately be distributed to Elly would be:

**a.** $52,000. **c.** $24,000.
**b.** $38,000. **d.** $34,000.

*13. **(LO 4)** Louisa Santiago purchases 50% of Leo Lemon's capital interest in the K & L partnership for $22,000. If the capital balance of Kate Kildare and Leo Lemon are $40,000 and $30,000, respectively, Santiago's capital balance following the purchase is:

**a.** $22,000. **c.** $20,000.
**b.** $35,000. **d.** $15,000.

*14. **(LO 4)** Capital balances in the MEM partnership are Mary, Capital $60,000; Ellen, Capital $50,000; and Mills, Capital $40,000, and income ratios are 5:3:2, respectively. The MEMO partnership is formed by admitting Oleg to the firm with a cash investment of $60,000 for a 25% capital interest. The bonus to be credited to Mills, Capital in admitting Oleg is:

**a.** $10,000. **c.** $3,750.
**b.** $7,500. **d.** $1,500.

*15. **(LO 4)** Capital balances in the MURF partnership are Molly, Capital $50,000; Ursula, Capital $40,000; Ray, Capital $30,000; and Fred, Capital $20,000, and income ratios are 4:3:2:1, respectively. Fred withdraws from the firm following payment of $29,000 in cash from the partnership. Ursula's capital balance after recording the withdrawal of Fred is:

**a.** $36,000. **c.** $38,000.
**b.** $37,000. **d.** $40,000.

## Solutions

**1. a.** A partnership is not a taxable entity. Rather, the partnership income is taxed on the individual tax returns of the partners. The other choices are characteristics of a partnership.

**2. c.** A partnership is not a taxable entity; therefore, the partnership agreement should not include the basis for splitting partnership income taxes. The other choices should be included in a partnership agreement.

**3. b.** Unlimited liability is a disadvantage of a partnership. The other choices are advantages of a partnership.

**4. c.** Upon formation of a partnership, each partner's initial investment of assets should be recorded at their fair values, not (a) book values, (b) cost, or (d) appraised values.

**5. a.** When a partnership is formed, assets invested by the partners are recorded at their fair values. Thus, the combined total capital is $8,000 (cash) + $16,000 (fair value of truck) + $55,000 (fair value of the new storage garage) = $79,000, not (b) $60,000, (c) $75,000, or (d) $90,000.

**6. b.** C's income is computed by multiplying the partnership income ($60,000) by partner C's income ratio (20%) = $12,000. The other choices are incorrect because (a) is the amount of income that would be allocated to partner N ($60,000 × 50% = $30,000), (c) is the amount of income that would be allocated to partner B ($60,000 × 30% = $18,000), and (d) there is a correct answer.

**7. c.** After allocating the salary allowance to each partner, $30,000 will be available to divide according to the income ratio [$60,000 − ($10,000 × 3)]. Partner B's share of the remainder is $9,000 ($30,000 × 30%). Partner B's total share of income is equal to $19,000 (salary allowance of $10,000 + B's share of the remainder $9,000), not (a) $12,000, (b) $20,000, or (d) $21,000.

**8. c.** To close a partner's drawings account, an entry must be made that credits the partner's drawings account and debits that partner's capital account. The other choices are therefore incorrect because a partner's drawings account or a dividend account is not debited.

**9. d.** The owners' equity statement for a partnership is called the partners' capital statement. The other choices are incorrect because (a) the total amount, not the details, of the distribution of net income is shown in the partners' capital statement; (b) the distribution of net income is not shown on the balance sheet but on the partners' capital statement; and (c) each individual partner's capital balance is shown in the balance sheet.

**10. a.** The order of events in the liquidation of a partnership is (2) sell noncash assets, (3) allocate gain/loss, (4) pay partnership liabilities, and (1) distribute remaining cash. The other choices are therefore incorrect.

**11. b.** The book value of the noncash assets is $95,000 ($22,000 + $73,000). When Creekville sells its noncash assets for $85,000, Creekville realizes a loss of $10,000 on the sale. The income ratio for Elly is 40% (4/10). When allocating the $10,000 loss on realization to the partners, Elly's capital account will be debited for $4,000 ($10,000 × 4/10). The amount of cash that would ultimately be distributed to Elly would be $48,000 ($52,000 − $4,000), not (a) $52,000, (c) $34,000, or (d) $86,000.

**12. d.** The loss on realization is $35,000 ($22,000 + $73,000 − $60,000). When allocating the $35,000 loss on realization to the partners, Harriet's, Mike's, and Elly's capital accounts will be debited $7,000, $14,000, and $14,000, respectively, as per their income ratios. Mike will now have a capital deficiency of $6,000 ($8,000 − $14,000). Elly's share of this deficiency is $4,000 ($6,000 × 4/6). The amount of cash that would ultimately be distributed to Elly would be $34,000 ($52,000 − $14,000 − $4,000), not (a) $52,000, (b) $38,000, or (c) $24,000.

*13. **d.** Because this is a purchase of a partner's interest, Santiago's capital account will be equal to half of the interest she is purchasing, or $15,000 ($30,000/2). The $22,000 paid by Santiago to Lemon is irrelevant in this question. The other choices are therefore incorrect.

*14. **d.** Total partnership capital after the investment by Oleg is $210,000 ($60,000 + $50,000 + $40,000 + $60,000). Oleg's share of partnership capital is $52,500 ($210,000 × 25%). The total bonus to the old partners related to Oleg's admission is $7,500 [$60,000

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(Oleg's investment) − $52,500 (Oleg's share of partnership capital)]. Mills' share of the total bonus is equal to the total bonus ($7,500) times Mills' income ratio (20%) or $1,500 ($7,500 × 20%), not (a) $10,000, (b) $7,500, or (c) $3,750.

*15. **b.** The total bonus to Fred from the partnership is $9,000 ($29,000 − $20,000). Because Fred has withdrawn, the income ratio must be restated as 4:3:2. Ursula's share of the bonus paid to Fred is $3,000 {$9,000 × [3/(4 + 3 + 2)]}. Because the bonus is being paid to Fred, Ursula's capital account must be reduced by her share of the bonus. After Fred's withdrawal, Ursula's capital account will have a balance of $37,000 ($40,000 − $3,000), not (a) $36,000, (c) $38,000, or (d) $40,000.

## Practice Brief Exercises

**1. (LO 1)** Charlene Tilson and Jade Petricka decide to organize the Petson partnership. Tilson invests $15,000 cash, and Petricka contributes $12,000 cash and two assets from her sole proprietorship (accounts receivable $9,000 less allowance for doubtful accounts $1,000, and land having a book value of $7,000). Prepare the entry to record Petricka's investment in the partnership, assuming the net realizable value of the receivables is $7,500 and the land has a fair value of $10,000.

*Journalize entries in forming a partnership.*

### Solution

**1.**

| | | |
|---|---|---|
| Cash | 12,000 | |
| Accounts Receivable | 9,000 | |
| Land | 10,000 | |
| Allowance for Doubtful Accounts | | 1,500 |
| Jade Petricka, Capital | | 29,500 |

**2. (LO 2)** Matt & Daveson Co. reports net income of $51,000. Interest allowances are Matt $8,000 and Daveson $10,000, salary allowances are Matt $30,000 and Daveson $20,000, and the remainder is shared equally. Show the division of net income.

*Show division of net income.*

### Solution

**2.**

**Division of Net Income**

| | Matt | Daveson | Total |
|---|---|---|---|
| Salary allowance | $30,000 | $20,000 | $50,000 |
| Interest allowance | 8,000 | 10,000 | 18,000 |
| Remaining deficiency ($17,000) [$51,000 − ($50,000 + $18,000)] | | | |
| Matt ($17,000 × 50%) | (8,500) | | |
| Daveson ($17,000 × 50%) | | (8,500) | |
| Total remainder | | | (17,000) |
| Total division of net income | $29,500 | $21,500 | $51,000 |

**3. (LO 3)** After liquidating noncash assets and paying creditors, account balances in Mann Co. are Cash $33,000; Zach, Capital (Cr.) $13,000; Put, Capital (Cr.) $10,000; and Nam, Capital (Cr.) $10,000. The partners share income equally. Journalize the final distribution of cash to the partners

*Journalize final cash distribution in liquidation.*

### Solution

**3.**

| | | |
|---|---|---|
| Zach, Capital | 13,000 | |
| Put, Capital | 10,000 | |
| Nam, Capital | 10,000 | |
| Cash | | 33,000 |

## Practice Exercises

**1. (LO 2)** M. Gomez (beginning capital $50,000) and I. Inez (beginning capital $80,000) are partners. During 2020, the partnership earned net income of $60,000, and Gomez made drawings of $15,000 while Inez made drawings of $20,000.

*Prepare journal entries to record allocation of net income.*

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### Instructions

**a.** Assume the partnership income-sharing agreement calls for income to be divided 55% to Gomez and 45% to Inez. Prepare the journal entry to record the allocation of net income.

**b.** Assume the partnership income-sharing agreement calls for income to be divided with a salary of $30,000 to Gomez and $20,000 to Inez with the remainder divided 55% to Gomez and 45% to Inez. Prepare the journal entry to record the allocation of net income.

**c.** Assume the partnership income-sharing agreement calls for income to be divided with a salary of $40,000 to Gomez and $30,000 to Inez, interest of 10% on beginning capital, and the remainder divided 50%–50%. Prepare the journal entry to record the allocation of net income.

**d.** Compute the partners' ending capital balances under the assumption in part (c).

### Solution

**1. a.**

| | | | |
|---|---|---|---|
| | Income Summary | 60,000 | |
| | M. Gomez, Capital ($60,000 × 55%) | | 33,000 |
| | I. Inez, Capital ($60,000 × 45%) | | 27,000 |

**b.**

| | | | |
|---|---|---|---|
| | Income Summary | 60,000 | |
| | M. Gomez, Capital [$30,000 + ($10,000 × 55%)] | | 35,500 |
| | I. Inez, Capital [$20,000 + ($10,000 × 45%)] | | 24,500 |

**c.**

| | | | |
|---|---|---|---|
| | Income Summary | 60,000 | |
| | M. Gomez, Capital [$40,000 + $5,000 − ($23,000 × 50%)] | | 33,500 |
| | I. Inez, Capital [$30,000 + $8,000 − ($23,000 × 50%)] | | 26,500 |

**d.** Gomez: $50,000 + $33,500 − $15,000 = $68,500

Inez: $80,000 + $26,500 − $20,000 = $86,500

*Prepare schedule of cash payments and journalize transactions in a liquidation.*

**2. (LO 3)** The Braun Company at December 31 has cash $15,000, noncash assets $110,000, liabilities $60,000, and the following capital balances: Ho $40,000 and Li $25,000. The firm is liquidated, and $90,000 in cash is received for the noncash assets. Ho's and Li's income ratios are 60% and 40%, respectively.

### Instructions

**a.** Prepare a schedule of cash payments.

**b.** Prepare the entries to record the following, assuming that The Braun Company decides to liquidate the company.

1. The sale of noncash assets.
2. The allocation of the gain or loss on liquidation to the partners.
3. Payment of creditors (Accounts Payable).
4. Distribution of cash to the partners.

### Solution

**2. a.**

**The Braun Company**
**Schedule of Cash Payments**

| Item | Cash | + | Noncash Assets | = | Liabilities | + | Ho, Capital | + | Li, Capital |
|---|---|---|---|---|---|---|---|---|---|
| Balances before liquidation | $ 15,000 | | $110,000 | | $60,000 | | $40,000 | | $25,000 |
| Sale of noncash assets and allocation of gain | 90,000 | | (110,000) | | | | (12,000) | | (8,000) |
| New balances | 105,000 | | 0 | | 60,000 | | 28,000 | | 17,000 |
| Pay liabilities | (60,000) | | | | (60,000) | | | | |
| New balances | 45,000 | | 0 | | 0 | | 28,000 | | 17,000 |
| Cash distribution to partners | (45,000) | | | | | | (28,000) | | (17,000) |
| Final balances | $ 0 | | $ 0 | | $ 0 | | $ 0 | | $ 0 |

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| | | | |
|---|---|---|---|
| **b. 1.** | Loss on Realization | 20,000 | |
| | Cash | 90,000 | |
| | Noncash Assets | | 110,000 |
| **2.** | Ho, Capital | 12,000 | |
| | Li, Capital | 8,000 | |
| | Loss on Realization | | 20,000 |
| **3.** | Accounts Payable | 60,000 | |
| | Cash | | 60,000 |
| **4.** | Ho, Capital | 28,000 | |
| | Li, Capital | 17,000 | |
| | Cash | | 45,000 |

## Practice Problem

**(LO 2)** On January 1, 2020, the capital balances in Hollingsworth Company are Lois Holly $26,000 and Jim Worth $24,000. In 2020 the partnership reports net income of $30,000. The income ratio provides for salary allowances of $12,000 for Holly and $10,000 to Worth and the remainder to be shared equally. Neither partner had any drawings in 2020.

*Journalize and prepare a schedule showing distribution of net income.*

### Instructions

**a.** Prepare a schedule showing the distribution of net income in 2020.

**b.** Journalize the division of 2020 net income to the partners.

### Solution

**a.**

Net income $30,000

**Division of Net Income**

| | Lois Holly | Jim Worth | Total |
|---|---|---|---|
| Salary allowance | $12,000 | $10,000 | $22,000 |
| Remaining income $8,000 ($30,000 − $22,000) | | | |
| Lois Holly ($8,000 × 50%) | 4,000 | | |
| Jim Worth ($8,000 × 50%) | | 4,000 | |
| Total remainder | | | 8,000 |
| Total division of net income | $16,000 | $14,000 | $30,000 |

| | | | | |
|---|---|---|---|---|
| **b.** 12/31/20 | Income Summary | | 30,000 | |
| | Lois Holly, Capital | | | 16,000 |
| | Jim Worth, Capital | | | 14,000 |
| | (To close net income to partners' capital) | | | |

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendix to the chapter.

## Questions

**1.** The characteristics of a partnership include the following: (a) association of individuals, (b) limited life, and (c) co-ownership of property. Explain each of these terms.

**2.** Kevin Mathis is confused about the partnership characteristics of (a) mutual agency and (b) unlimited liability. Explain these two characteristics for Kevin.

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**3.** Lance Kosinski and Matt Morrisen are considering a business venture. They ask you to explain the advantages and disadvantages of the partnership form of organization.

**4.** Why might a company choose to use a limited partnership?

**5.** Newland and Palermo form a partnership. Newland contributes land with a book value of $50,000 and a fair value of $60,000. Newland also contributes equipment with a book value of $52,000 and a fair value of $57,000. The partnership assumes a $20,000 mortgage on the land. What should be the balance in Newland's capital account upon formation of the partnership?

**6.** W. Jenson, N. Emch, and W. Gilligan have a partnership called Outlaws. A dispute has arisen among the partners. Jenson has invested twice as much in assets as the other two partners, and he believes net income and net losses should be shared in accordance with the capital ratios. The partnership agreement does not specify the division of profits and losses. How will net income and net loss be divided?

**7.** Mutt and Jeff are discussing how income and losses should be divided in a partnership they plan to form. What factors should be considered in determining the division of net income or net loss?

**8.** M. Elston and R. Ogle have partnership capital balances of $40,000 and $80,000, respectively. The partnership agreement indicates that net income or net loss should be shared equally. If net income for the partnership is $42,000, how should the net income be divided?

**9.** S. Pletcher and F. Holt share net income and net loss equally. (a) Which account(s) is (are) debited and credited to record the division of net income between the partners? (b) If S. Pletcher withdraws $30,000 in cash for personal use instead of salary, which account is debited and which is credited?

**10.** Partners T. Greer and R. Parks are provided salary allowances of $30,000 and $25,000, respectively. They divide the remainder of the partnership income in a ratio of 3:2. If partnership net income is $40,000, how much is allocated to Greer and Parks?

**11.** Are the financial statements of a partnership similar to those of a proprietorship? Discuss.

***12.** How does the liquidation of a partnership differ from the dissolution of a partnership?

**13.** Roger Fuller and Mike Rangel are discussing the liquidation of a partnership. Roger maintains that all cash should be distributed to partners on the basis of their income ratios. Is he correct? Explain.

**14.** In continuing their discussion from Question 13, Mike says that even in the case of a capital deficiency, all cash should still be distributed on the basis of capital balances. Is Mike correct? Explain.

**15.** Norris, Madson, and Howell have income ratios of 5:3:2 and capital balances of $34,000, $31,000, and $28,000, respectively. Noncash assets are sold at a gain and allocated to the partners. After creditors are paid, $103,000 of cash is available for distribution to the partners. How much cash should be paid to Madson?

**16.** Before the final distribution of cash, account balances are Cash $27,000; S. Shea, Capital $19,000 (Cr.); L. Seastrom, Capital $12,000 (Cr.); and M. Luthi, Capital $4,000 (Dr.). Luthi is unable to pay any of the capital deficiency. If the income-sharing ratios are 5:3:2, respectively, how much cash should be paid to L. Seastrom?

**17.** Why is **Apple** not a partnership?

***18.** Susan Turnbull decides to purchase from an existing partner for $50,000 a one-third interest in a partnership. What effect does this transaction have on partnership net assets?

***19.** Jerry Park decides to invest $25,000 in a partnership for a one-sixth capital interest. How much do the partnership's net assets increase? Does Park also acquire a one-sixth income ratio through this investment?

***20.** Jill Parsons purchases for $72,000 Jamar's interest in the Tholen-Jamar partnership. Assuming that Jamar has a $68,000 capital balance in the partnership, what journal entry is made by the partnership to record this transaction?

***21.** Jaime Keller has a $41,000 capital balance in a partnership. She sells her interest to Sam Parmenter for $45,000 cash. What entry is made by the partnership for this transaction?

***22.** Andrea Riley retires from the partnership of Jaggard, Pester, and Riley. She receives $85,000 of partnership assets in settlement of her capital balance of $81,000. Assuming that the income-sharing ratios are 5:3:2, respectively, how much of Riley's bonus is debited to Pester's capital account?

***23.** Your roommate argues that partnership assets should be revalued in situations like those in Question 21. Why is this generally not done?

***24.** How is a deceased partner's equity determined?

## Brief Exercises

*Journalize entries in forming a partnership.*

**BE12.1 (LO 1)** Barbara Ripley and Fred Nichols decide to organize the ALL-Star partnership. Ripley invests $15,000 cash, and Nichols contributes $10,000 cash and equipment having a book value of $3,500. Prepare the entry to record Nichols's investment in the partnership, assuming the equipment has a fair value of $4,000.

*Prepare portion of opening balance sheet for partnership.*

**BE12.2 (LO 1)** **Financial Statement** Penner and Torres decide to merge their proprietorships into a partnership called Pentor Company. The balance sheet of Torres Co. shows:

| | | |
|---|---|---|
| Accounts receivable | $16,000 | |
| Less: Allowance for doubtful accounts | 1,200 | $14,800 |
| Equipment | 20,000 | |
| Less: Accumulated depreciation—equip. | 7,000 | 13,000 |

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The partners agree that the net realizable value of the receivables is $14,500 and that the fair value of the equipment is $11,000. Indicate how the accounts should appear in the opening balance sheet of the partnership.

**BE12.3 (LO 2)** Rod Dall Co. reports net income of $75,000. The income ratios are Rod 60% and Dall 40%. Indicate the division of net income to each partner, and prepare the entry to distribute the net income. *Journalize the division of net income using fixed income ratios.*

**BE12.4 (LO 2)** PFW Co. reports net income of $45,000. Partner salary allowances are Pitts $15,000, Filbert $5,000, and Witten $5,000. Indicate the division of net income to each partner, assuming the income ratio is 50:30:20, respectively. *Compute division of net income with a salary allowance and fixed ratios.*

**BE12.5 (LO 2)** Nabb & Fry Co. reports net income of $31,000. Interest allowances are Nabb $7,000 and Fry $5,000, salary allowances are Nabb $15,000 and Fry $10,000, and the remainder is shared equally. Show the distribution of income. *Show division of net income when allowances exceed net income.*

**BE12.6 (LO 3)** After liquidating noncash assets and paying creditors, account balances in the Mann Co. are Cash $21,000; A, Capital (Cr.) $8,000; B, Capital (Cr.) $9,000; and C, Capital (Cr.) $4,000. The partners share income equally. Journalize the final distribution of cash to the partners. *Journalize final cash distribution in liquidation.*

**BE12.7 (LO 4)* Gamma Co. capital balances are Barr $30,000, Croy $25,000, and Eubank $22,000. The partners share income equally. Tovar is admitted to the firm by purchasing one-half of Eubank's interest for $13,000. Journalize the admission of Tovar to the partnership. *Journalize admission by purchase of an interest.*

**BE12.8 (LO 4)* In Eastwood Co., capital balances are Irey $40,000 and Pedigo $50,000. The partners share income equally. Vernon is admitted to the firm with a 45% interest by an investment of cash of $58,000. Journalize the admission of Vernon. *Journalize admission by investment.*

**BE12.9 (LO 4)* Capital balances in Pelmar Co. are Lango $40,000, Oslo $30,000, and Fernetti $20,000. Lango and Oslo each agree to pay Fernetti $12,000 from their personal assets. Lango and Oslo each receive 50% of Fernetti's equity. The partners share income equally. Journalize the withdrawal of Fernetti. *Journalize withdrawal paid by personal assets.*

**BE12.10 (LO 4)* Data pertaining to Pelmar Co. are presented in BE12.9. Instead of payment from personal assets, assume that Fernetti receives $24,000 from partnership assets in withdrawing from the firm. Journalize the withdrawal of Fernetti. *Journalize withdrawal paid by partnership assets.*

## DO IT! Exercises

**DO IT! 12.1 (LO 1)** Indicate whether each of the following statements is true or false. If false, indicate how to correct the statement. *Analyze statements about partnership organization.*

_____ **1.** Each partner is personally and individually liable for all partnership liabilities.

_____ **2.** If a partnership dissolves, each partner has a claim to the specific assets he/she contributed to the firm.

_____ **3.** In a limited partnership, all partners have limited liability.

_____ **4.** A major advantage of regular partnership is that it is simple and inexpensive to create and operate.

_____ **5.** Members of a limited liability company can take an active management role.

**DO IT! 12.2 (LO 2)** Frontenac Company reported net income of $75,000. The partnership agreement provides for salaries of $25,000 to Miley and $18,000 to Guthrie. They divide the remainder 40% to Miley and 60% to Guthrie. Miley asks your help to divide the net income between the partners and to prepare the closing entry. *Divide net income and prepare closing entry.*

**DO IT! 12.3a (LO 3)** The partners of LR Company have decided to liquidate their business. Noncash assets were sold for $125,000. The income ratios of the partners Cisneros, Gunselman, and Forren are 3:2:3, respectively. Complete the following schedule of cash payments for LR Company. *Complete schedule of cash payments.*

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LR Company

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| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Item | Cash | + | Noncash Assets | = | Liabilities | + | Cisneros, Capital | + | Gunselman, Capital | + | Forren, Capital |
| 2 | Balances before liquidation | 15,000 | | 90,000 | | 40,000 | | 20,000 | | 32,000 | | 13,000 |
| 3 | Sale of noncash assets and allocation of gain | | | | | | | | | | | |
| 4 | New balances | | | | | | | | | | | |
| 5 | Pay liabilities | | | | | | | | | | | |
| 6 | New balances | | | | | | | | | | | |
| 7 | Cash distribution to partners | | | | | | | | | | | |
| 8 | Final balances | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |

*Prepare entries to record absorption of capital deficiency and distribution of cash.*

**DO IT! 12.3b (LO 3)** Parsons Company wishes to liquidate the firm by distributing the company's cash to the three partners. Prior to the distribution of cash, the company's balances are Cash $73,000; Oakley, Capital (Cr.) $47,000; Quaney, Capital (Dr.) $14,000; and Ellis, Capital (Cr.) $40,000. The income ratios of the three partners are 3:3:4, respectively. Prepare the entry to record the absorption of Quaney's capital deficiency by the other partners and the distribution of cash to the partners with credit balances.

## Exercises

*Identify characteristics of partnership.*

**E12.1 (LO 1)** Mark Rensing has prepared the following list of statements about partnerships.

1. A partnership is an association of three or more persons to carry on as co-owners of a business for profit.
2. The legal requirements for forming a partnership can be quite burdensome.
3. A partnership is not an entity for financial reporting purposes.
4. The net income of a partnership is taxed as a separate entity.
5. The act of any partner is binding on all other partners, even when partners perform business acts beyond the scope of their authority.
6. Each partner is personally and individually liable for all partnership liabilities.
7. When a partnership is dissolved, the assets legally revert to the original contributor.
8. In a limited partnership, one or more partners have unlimited liability and one or more partners have limited liability for the debts of the firm.
9. Mutual agency is a major advantage of the partnership form of business.

### Instructions

Identify each statement as true or false. If false, indicate how to correct the statement.

*Journalize entry for formation of a partnership.*

**E12.2 (LO 1)** K. Decker, S. Rosen, and E. Toso are forming a partnership. Decker is transferring $50,000 of personal cash to the partnership. Rosen owns land worth $15,000 and a small building worth $80,000, which she transfers to the partnership. Toso transfers to the partnership cash of $9,000, accounts receivable of $32,000, and equipment worth $39,000. The partnership expects to collect $29,000 of the accounts receivable.

### Instructions

**a.** Prepare the journal entries to record each of the partners' investments.

**b.** What amount would be reported as total owners' equity immediately after the investments?

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**E12.3 (LO 1)** Suzy Vopat has owned and operated a proprietorship for several years. On January 1, she decides to terminate this business and become a partner in the firm of Vopat and Sigma. Vopat's investment in the partnership consists of $12,000 in cash, and the following assets of the proprietorship: accounts receivable $14,000 less allowance for doubtful accounts of $2,000, and equipment $30,000 less accumulated depreciation of $4,000. It is agreed that the allowance for doubtful accounts should be $3,000 for the partnership. The fair value of the equipment is $23,500.

*Journalize entry for formation of a partnership.*

**Instructions**

Journalize Vopat's admission to the firm of Vopat and Sigma.

**E12.4 (LO 2)** McGill and Smyth have capital balances on January 1 of $50,000 and $40,000, respectively. The partnership income-sharing agreement provides for (1) annual salaries of $22,000 for McGill and $13,000 for Smyth, (2) interest at 10% on beginning capital balances, and (3) remaining income or loss to be shared 60% by McGill and 40% by Smyth.

*Prepare schedule showing distribution of net income and closing entry.*

Excel

**Instructions**

**a.** Prepare a schedule showing the distribution of net income, assuming net income is (1) $50,000 and (2) $36,000.

**b.** Journalize the allocation of net income in each of the situations above.

**E12.5 (LO 2)** Coburn (beginning capital, $60,000) and Webb (beginning capital $90,000) are partners. During 2020, the partnership earned net income of $80,000, and Coburn made drawings of $18,000 while Webb made drawings of $24,000.

*Prepare journal entries to record allocation of net income.*

**Instructions**

**a.** Assume the partnership income-sharing agreement calls for income to be divided 45% to Coburn and 55% to Webb. Prepare the journal entry to record the allocation of net income.

**b.** Assume the partnership income-sharing agreement calls for income to be divided with a salary of $30,000 to Coburn and $25,000 to Webb, with the remainder divided 45% to Coburn and 55% to Webb. Prepare the journal entry to record the allocation of net income.

**c.** Assume the partnership income-sharing agreement calls for income to be divided with a salary of $40,000 to Coburn and $35,000 to Webb, interest of 10% on beginning capital, and the remainder divided 50%–50%. Prepare the journal entry to record the allocation of net income.

**d.** Compute the partners' ending capital balances under the assumption in part (c).

**E12.6 (LO 2)** **Financial Statement** For National Co., beginning capital balances on January 1, 2020, are Nancy Payne $20,000 and Ann Dody $18,000. During the year, drawings were Payne $8,000 and Dody $5,000. Net income was $40,000, and the partners share income equally.

*Prepare partners' capital statement and partial balance sheet.*

**Instructions**

**a.** Prepare the partners' capital statement for the year.

**b.** Prepare the owners' equity section of the balance sheet at December 31, 2020.

**E12.7 (LO 2)** **Financial Statement** Terry, Nick, and Frank are forming The Doctor Partnership. Terry is transferring $30,000 of personal cash and equipment worth $25,000 to the partnership. Nick owns land worth $28,000 and a small building worth $75,000, which he transfers to the partnership. There is a long-term mortgage of $20,000 on the land and building, which the partnership assumes. Frank transfers cash of $7,000, accounts receivable of $36,000, supplies worth $3,000, and equipment worth $27,000 to the partnership. The partnership expects to collect $32,000 of the accounts receivable.

*Prepare a classified balance sheet of a partnership.*

**Instructions**

Prepare a classified balance sheet for the partnership after the partners' investments on December 31, 2020.

**E12.8 (LO 3)** Sedgwick Company at December 31 has cash $20,000, noncash assets $100,000, liabilities $55,000, and the following capital balances: Floyd $45,000 and DeWitt $20,000. The firm is liquidated, and $105,000 in cash is received for the noncash assets. Floyd and DeWitt income ratios are 60% and 40%, respectively.

*Prepare cash payments schedule.*

**Instructions**

Prepare a schedule of cash payments.

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*Journalize transactions in a liquidation.*

**E12.9 (LO 3)** Data for Sedgwick Company are presented in E12.8. Sedgwick Company now decides to liquidate the partnership.

**Instructions**

Prepare the entries to record:

**a.** The sale of noncash assets.

**b.** The allocation of the gain or loss on realization to the partners.

**c.** Payment of creditors.

**d.** Distribution of cash to the partners.

*Journalize transactions with a capital deficiency.*

**E12.10 (LO 3)** Prior to the distribution of cash to the partners, the accounts in the VUP Company are Cash $24,000; Vogel, Capital (Cr.) $17,000; Utech, Capital (Cr.) $15,000; and Pena, Capital (Dr.) $8,000. The income ratios are 5:3:2, respectively. VUP Company decides to liquidate the company.

**Instructions**

**a.** Prepare the entry to record (1) Pena's payment of $8,000 in cash to the partnership and (2) the distribution of cash to the partners with credit balances.

**b.** Prepare the entry to record (1) the absorption of Pena's capital deficiency by the other partners and (2) the distribution of cash to the partners with credit balances.

*Journalize admission of a new partner by purchase of an interest.*

***E12.11 (LO 4)** K. Kolmer, C. Eidman, and C. Ryno share income on a 5:3:2 basis. They have capital balances of $34,000, $26,000, and $21,000, respectively, when Don Jernigan is admitted to the partnership.

**Instructions**

Prepare the journal entry to record the admission of Don Jernigan under each of the following assumptions.

**a.** Purchase of 50% of Kolmer's equity for $19,000.

**b.** Purchase of 50% of Eidman's equity for $12,000.

**c.** Purchase of $33^{1}/_{3}$% of Ryno's equity for $9,000.

*Journalize admission of a new partner by investment.*

***E12.12 (LO 4)** S. Pagan and T. Tabor share income on a 6:4 basis. They have capital balances of $100,000 and $60,000, respectively, when W. Wolford is admitted to the partnership.

**Instructions**

Prepare the journal entry to record the admission of W. Wolford under each of the following assumptions.

**a.** Investment of $90,000 cash for a 30% ownership interest with bonuses to the existing partners.

**b.** Investment of $50,000 cash for a 30% ownership interest with a bonus to the new partner.

*Journalize withdrawal of a partner with payment from partners' personal assets.*

***E12.13 (LO 4)** N. Essex, C. Gilmore, and C. Heganbart have capital balances of $50,000, $40,000, and $30,000, respectively. Their income ratios are 4:4:2. Heganbart withdraws from the partnership under each of the following independent conditions.

1. Essex and Gilmore agree to purchase Heganbart's equity by paying $17,000 each from their personal assets. Each purchaser receives 50% of Heganbart's equity.
2. Gilmore agrees to purchase all of Heganbart's equity by paying $22,000 cash from her personal assets.
3. Essex agrees to purchase all of Heganbart's equity by paying $26,000 cash from his personal assets.

**Instructions**

Journalize the withdrawal of Heganbart under each of the assumptions above.

*Journalize withdrawal of a partner with payment from partnership assets.*

***E12.14 (LO 4)** B. Higgins, J. Mayo, and N. Rice have capital balances of $95,000, $75,000, and $60,000, respectively. They share income or loss on a 5:3:2 basis. Rice withdraws from the partnership under each of the following conditions.

1. Rice is paid $64,000 in cash from partnership assets, and a bonus is granted to the retiring partner.
2. Rice is paid $52,000 in cash from partnership assets, and bonuses are granted to the remaining partners.

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**Instructions**

Journalize the withdrawal of Rice under each of the assumptions above.

*E12.15 (LO 4) Foss, Albertson, and Espinosa are partners who share profits and losses 50%, 30%, and 20%, respectively. Their capital balances are $100,000, $60,000, and $40,000, respectively.

*Journalize entry for admission and withdrawal of partners.*

**Instructions**

**a.** Assume Garrett joins the partnership by investing $88,000 for a 25% interest with bonuses to the existing partners. Prepare the journal entry to record his investment.

**b.** Assume instead that Foss leaves the partnership. Foss is paid $110,000 with a bonus to the retiring partner. Prepare the journal entry to record Foss's withdrawal.

## Problems: Set A

P12.1A (LO 1, 2) Financial Statement The post-closing trial balances of two proprietorships on January 1, 2020, are presented below.

*Prepare entries for formation of a partnership and a balance sheet.*

GLS

| | Sorensen Company | | Lucas Company | |
|---|---|---|---|---|
| | Dr. | Cr. | Dr. | Cr. |
| Cash | $ 14,000 | | $12,000 | |
| Accounts receivable | 17,500 | | 26,000 | |
| Allowance for doubtful accounts | | $ 3,000 | | $ 4,400 |
| Inventory | 26,500 | | 18,400 | |
| Equipment | 45,000 | | 29,000 | |
| Accumulated depreciation—equipment | | 24,000 | | 11,000 |
| Notes payable | | 18,000 | | 15,000 |
| Accounts payable | | 22,000 | | 31,000 |
| Sorensen, capital | | 36,000 | | |
| Lucas, capital | | | | 24,000 |
| | $103,000 | $103,000 | $85,400 | $85,400 |

Sorensen and Lucas decide to form a partnership, Solu Company, with the following agreed upon valuations for noncash assets.

| | Sorensen Company | Lucas Company |
|---|---|---|
| Accounts receivable | $17,500 | $26,000 |
| Allowance for doubtful accounts | 4,500 | 4,000 |
| Inventory | 28,000 | 20,000 |
| Equipment | 25,000 | 15,000 |

All cash will be transferred to the partnership, and the partnership will assume all the liabilities of the two proprietorships. Further, it is agreed that Sorensen will invest an additional $5,000 in cash, and Lucas will invest an additional $19,000 in cash.

**Instructions**

**a.** Prepare separate journal entries to record the transfer of each proprietorship's assets and liabilities to the partnership.

a. Sorensen, Capital $40,000
Lucas, Capital $23,000

**b.** Journalize the additional cash investment by each partner.

**c.** Prepare a classified balance sheet for the partnership on January 1, 2020.

c. Total assets $173,000

P12.2A (LO 2) Financial Statement At the end of its first year of operations on December 31, 2020, NBS Company's accounts show the following.

*Journalize divisions of net income and prepare a partners' capital statement.*

| Partner | Drawings | Capital |
|---|---|---|
| Art Niensted | $23,000 | $48,000 |
| Greg Bolen | 14,000 | 30,000 |
| Krista Sayler | 10,000 | 25,000 |

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The capital balance represents each partner's initial capital investment. Therefore, net income or net loss for 2020 has not been closed to the partners' capital accounts.

### Instructions

**a.** Journalize the entry to record the division of net income for the year 2020 under each of the following independent assumptions.

a. 1. Niensted $18,000
2. Niensted $20,000
3. Niensted $17,700

**1.** Net income is $30,000. Income is shared 6:3:1.

**2.** Net income is $40,000. Niensted and Bolen are given salary allowances of $15,000 and $10,000, respectively. The remainder is shared equally.

**3.** Net income is $19,000. Each partner is allowed interest of 10% on beginning capital balances. Niensted is given a $15,000 salary allowance. The remainder is shared equally.

**b.** Prepare a schedule showing the division of net income under assumption (3) above.

c. Niensted $42,700

**c.** Prepare a partners' capital statement for the year under assumption (3) above.

*Prepare entries with a capital deficiency in liquidation of a partnership.*

**P12.3A (LO 3)** The partners in Crawford Company decide to liquidate the firm when the balance sheet shows the following.

**Crawford Company**
**Balance Sheet**
**May 31, 2020**

| Assets | | Liabilities and Owners' Equity | |
|---|---|---|---|
| Cash | $ 27,500 | Notes payable | $ 13,500 |
| Accounts receivable | 25,000 | Accounts payable | 27,000 |
| Allowance for doubtful accounts | (1,000) | Salaries and wages payable | 4,000 |
| Inventory | 34,500 | A. Jamison, capital | 33,000 |
| Equipment | 21,000 | S. Moyer, capital | 21,000 |
| Accumulated depreciation—equipment | (5,500) | P. Roper, capital | 3,000 |
| | $101,500 | | $101,500 |

The partners share income and loss 5:3:2. During the process of liquidation, the following transactions were completed in the following sequence.

**1.** A total of $51,000 was received from converting noncash assets into cash.
**2.** Gain or loss on realization was allocated to partners.
**3.** Liabilities were paid in full.
**4.** P. Roper paid his capital deficiency.
**5.** Cash was paid to the partners with credit balances.

### Instructions

a. Loss on realization $23,000
Cash paid: to Jamison $21,500; to Moyer $14,100

**a.** Prepare the entries to record the transactions.

**b.** Post to the cash and capital accounts.

**c.** Assume that Roper is unable to pay the capital deficiency.

**1.** Prepare the entry to allocate Roper's debit balance to Jamison and Moyer.

**2.** Prepare the entry to record the final distribution of cash.

*Journalize admission of a partner under different assumptions.*

***P12.4A (LO 4)** At April 30, partners' capital balances in PDL Company are G. Donley $52,000, C. Lamar $48,000, and J. Pinkston $18,000. The income sharing ratios are 5:4:1, respectively. On May 1, the PDLT Company is formed by admitting J. Terrell to the firm as a partner.

### Instructions

**a.** Journalize the admission of Terrell under each of the following independent assumptions.

a. 1. Terrell $9,000
2. Terrell $16,000
3. Terrell $54,000
4. Terrell $48,000

**1.** Terrell purchases 50% of Pinkston's ownership interest by paying Pinkston $16,000 in cash.

**2.** Terrell purchases $33\frac{1}{3}$% of Lamar's ownership interest by paying Lamar $15,000 in cash.

**3.** Terrell invests $62,000 for a 30% ownership interest, and bonuses are given to the old partners.

**4.** Terrell invests $42,000 for a 30% ownership interest, which includes a bonus to the new partner.

**b.** Lamar's capital balance is $32,000 after admitting Terrell to the partnership by investment. If Lamar's ownership interest is 20% of total partnership capital, what were (1) Terrell's cash investment and (2) the bonus to the new partner?

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*P12.5A (LO 4) On December 31, the capital balances and income ratios in TEP Company are as follows.

*Journalize withdrawal of a partner under different assumptions.*

| Partner | Capital Balance | Income Ratio |
|---|---|---|
| Trayer | $60,000 | 50% |
| Emig | 40,000 | 30% |
| Posada | 30,000 | 20% |

**Instructions**

**a.** Journalize the withdrawal of Posada under each of the following assumptions.

**1.** Each of the continuing partners agrees to pay $18,000 in cash from personal funds to purchase Posada's ownership equity. Each receives 50% of Posada's equity.

**2.** Emig agrees to purchase Posada's ownership interest for $25,000 cash.

**3.** Posada is paid $34,000 from partnership assets, which includes a bonus to the retiring partner.

**4.** Posada is paid $22,000 from partnership assets, and bonuses to the remaining partners are recognized.

**b.** If Emig's capital balance after Posada's withdrawal is $43,600, what were (1) the total bonus to the remaining partners and (2) the cash paid by the partnership to Posada?

a. 1. Emig, Capital $15,000

2. Emig, Capital $30,000

3. Bonus $4,000

4. Bonus $8,000

## Continuing Case

### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 11.)

CC12 Natalie's high school friend, Katy Peterson, has been operating a bakery for approximately 18 months. Because Natalie has been so successful operating Cookie Creations, Katy would like to have Natalie become her partner. Katy believes that together they will create a thriving cookie-making business. Natalie is quite happy with her current business set-up. Up until now, she had not considered joining forces with anyone. However, Natalie thinks that it may be a good idea to establish a partnership with Katy, and decides to look into it.

*Go to* **WileyPLUS** *for complete case details and instructions.*

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## Ethics Case

EC12 Alexandra and Kellie operate a beauty salon as partners who share profits and losses equally. The success of their business has exceeded their expectations; the salon is operating quite profitably. Kellie is anxious to maximize profits and schedules appointments from 8 a.m. to 6 p.m. daily, even sacrificing some lunch hours to accommodate regular customers. Alexandra schedules her appointments from 9 a.m. to 5 p.m. and takes long lunch hours. Alexandra regularly makes significantly larger withdrawals of cash than Kellie does, but, she says, "Kellie, you needn't worry, I never make a withdrawal without you knowing about it, so it is properly recorded in my drawings account and charged against my capital at the end of the year." Alexandra's withdrawals to date are double Kellie's.

**Instructions**

**a.** Who are the stakeholders in this situation?

**b.** Identify the problems with Alexandra's actions and discuss the ethical considerations involved.

**c.** How might the partnership agreement be revised to accommodate the differences in Alexandra's and Kellie's work and withdrawal habits?

## Expand Your Critical Thinking

### Real-World Focus

CT12.1 This exercise is an introduction to the Big Four accounting firms, all of which are partnerships: Deloitte & Touche, Ernst & Young, KPMG, and PricewaterhouseCoopers.

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**Instructions**

Select a firm that is of interest to you, go to the firm's homepage, and then answer the following questions.

**a.** Name two services performed by the firm.

**b.** What is the firm's total annual revenue?

**c.** How many clients does it service?

**d.** How many people are employed by the firm?

**e.** How many partners are there in the firm?

## Decision-Making Across the Organization

**CT12.2** **Groupwork** Stephen Wadson and Mary Shively, two professionals in the finance area, have worked for Morrisen Leasing for a number of years. Morrisen Leasing is a company that leases high-tech medical equipment to hospitals. Stephen and Mary have decided that, with their financial expertise, they might start their own company to perform consulting services for individuals interested in leasing equipment. One form of organization they are considering is a partnership.

If they start a partnership, each individual plans to contribute $50,000 in cash. In addition, Stephen has a used IBM computer that originally cost $3,700, which he intends to invest in the partnership. The computer has a present fair value of $1,500.

Although both Stephen and Mary are financial wizards, they do not know a great deal about how a partnership operates. As a result, they have come to you for advice.

**Instructions**

With the class divided into groups, answer the following.

**a.** What are the major disadvantages of starting a partnership?

**b.** What type of document is needed for a partnership, and what should this document contain?

**c.** Both Stephen and Mary plan to work full-time in the new partnership. They believe that net income or net loss should be shared equally. However, they are wondering how to provide compensation to Stephen Wadson for his investment of the computer. What would you tell them?

**d.** Stephen is not sure how the computer equipment should be reported on his tax return. What would you tell him?

**e.** As indicated above, Stephen and Mary have worked together for a number of years. Stephen's skills complement Mary's and vice versa. If one of them dies, it will be very difficult for the other to maintain the business, not to mention the difficulty of paying the deceased partner's estate for his or her partnership interest. What would you advise them to do?

## Communication Activity

**CT12.3** **Writing** You are an expert in the field of forming partnerships. Ronald Hrabik and Meg Percival want to establish a partnership to start "Pasta Shop,'' and they are going to meet with you to discuss their plans. Prior to the meeting, you will send them a memo discussing the issues they need to consider.

**Instructions**

Write a memo in good form to be sent to Hrabik and Percival.

## All About You

**CT12.4** As this chapter indicates, the partnership form of organization has advantages and disadvantages. The chapter noted that different types of partnerships have been developed to minimize some of these disadvantages. Alternatively, an individual or company can choose the proprietorship or corporate form of organization.

**Instructions**

Go to two local businesses that are different, such as a restaurant, a retailer, a construction company, or a professional office (dentist, doctor, etc.), and find the answers to the following questions.

**a.** What form of organization do you use in your business?

**b.** What do you believe are the two major advantages of this form of organization for your business?

**c.** What do you believe are the two major disadvantages of this form of organization for your business?

**d.** Do you believe that eventually you may choose another form of organization?

**e.** Did you have someone help you form this organization (attorney, accountant, relative, etc.)?

*As partnership accounting is essentially the same under GAAP and IFRS, there is no* A Look at IFRS *section in this chapter.*

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Paul Sakuma/AP/Wide World Photos

# Corporations: Organization and Capital Stock Transactions

## Chapter Preview

Corporations like **Facebook** and **Google** have substantial resources at their disposal. In fact, the corporation is the dominant form of business organization in the United States in terms of sales, earnings, and number of employees. All of the 500 largest companies in the United States are corporations. In this chapter, we will explain the essential features of a corporation and the accounting for a corporation's capital stock transactions. In Chapter 14, we will look at other issues related to accounting for corporations.

## Feature Story

### Oh Well, I Guess I'll Get Rich

Suppose you started one of the fastest-growing companies in the history of business. Now suppose that by "going public"—issuing stock of your company to outside investors who are foaming at the mouth for the chance to buy its shares—you would instantly become one of the richest people in the world. Would you hesitate?

That is exactly what Mark Zuckerberg, the founder of **Facebook**, did. Many people who start high-tech companies go public as soon as possible to cash in on their riches. But Zuckerberg was reluctant to do so. To understand why, you need to understand the advantages and disadvantages of being a public company.

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The main motivation for issuing shares to the public is to raise money so you can grow your business. However, unlike a manufacturer or even an online retailer, Facebook doesn't need major physical resources, it doesn't have inventory, and it doesn't really need much money for marketing. But why not go public anyway, so the company would have some extra cash on hand—and so you personally get rich? As head of a closely held, nonpublic company, Zuckerberg was subject to far fewer regulations than a public company. Prior to going public, Zuckerberg could basically run the company however he wanted to.

For example, early in 2012, Facebook shocked the investment community by purchasing the photo-sharing service Instagram. The purchase was startling both for its speed (over a weekend) and price ($1 billion). Zuckerberg basically didn't seek anyone's approval. He thought it was a good idea, so he just did it. The structured decision-making process of a public company would make it very difficult for a public company to move that fast.

Speed is useful, but it is likely that Facebook will make even bigger acquisitions in the future. To survive among the likes of **Microsoft**, **Google**, and **Apple**, it needs lots of cash. To raise that amount of money, the company really needed to go public. So in 2012, Mark Zuckerberg reluctantly made Facebook a public company, thus becoming one of the richest people in the world.

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Discuss the major characteristics of a corporation. | • Characteristics of a corporation<br>• Forming a corporation<br>• Stockholder rights<br>• Stock issue considerations<br>• Corporate capital | **DO IT! 1a** Corporate Organization<br>**DO IT! 1b** Corporate Capital |
| **LO 2** Explain how to account for common, preferred, and treasury stock. | • Accounting for common stock<br>• Accounting for preferred stock<br>• Accounting for treasury stock | **DO IT! 2a** Issuance of Stock<br>**DO IT! 2b** Treasury Stock |
| **LO 3** Prepare a stockholders' equity section. | • Capital stock<br>• Additional paid-in capital | **DO IT! 3** Reporting Stockholders' Equity |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

# Corporate Form of Organization

**LEARNING OBJECTIVE 1**
Discuss the major characteristics of a corporation.

In 1819, Chief Justice John Marshall defined a corporation as "an artificial being, invisible, intangible, and existing only in contemplation of law." This definition is the foundation for the prevailing legal interpretation that a **corporation** is an **entity separate and distinct from its owners**.

A corporation is created by law, and its continued existence depends upon the statutes of the state in which it is incorporated. As a legal entity, a corporation has most of the rights and privileges of a person. The major exceptions relate to privileges that only a living person can exercise, such as the right to vote or to hold public office. A corporation is subject to the same duties and responsibilities as a person. For example, it must abide by the laws, and it must pay taxes.

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Two common ways to classify corporations are by **purpose** and by **ownership**. A corporation may be organized for the purpose of making a profit, or it may be not-for-profit. For-profit corporations include such well-known companies as **McDonald's**, **Nike**, **PepsiCo**, and **Google**. Not-for-profit corporations are organized for charitable, medical, or educational purposes. Examples are the **Salvation Army** and the **American Cancer Society**.

Classification by ownership differentiates publicly held and privately held corporations. A **publicly held corporation** may have thousands of stockholders. Its stock is regularly traded on a national securities exchange such as the New York Stock Exchange or NASDAQ. Examples are **IBM**, **Caterpillar**, and **Apple**.

In contrast, a **privately held corporation** usually has only a few stockholders, and does not offer its stock for sale to the general public (see **Alternative Terminology**). Privately held companies are generally much smaller than publicly held companies, although some notable exceptions exist. **Cargill Inc.**, a private corporation that trades in grain and other commodities, is one of the largest companies in the United States.

**ALTERNATIVE TERMINOLOGY**

**Privately held corporations are also referred to as *closely held corporations*.**

# Characteristics of a Corporation

In 1964, when **Nike**'s founders Phil Knight and Bill Bowerman were just getting started in the running shoe business, they formed their original organization as a partnership. In 1968, they reorganized the company as a corporation. A number of characteristics distinguish corporations from proprietorships and partnerships. We explain the most important of these characteristics below.

## Separate Legal Existence

As an entity separate and distinct from its owners, the corporation acts under its own name rather than in the name of its stockholders. Nike may buy, own, and sell property. It may borrow money, and it may enter into legally binding contracts in its own name. It may also sue or be sued, and it pays its own taxes.

In a partnership, the acts of the owners (partners) bind the partnership. In contrast, the acts of its owners (stockholders) do not bind the corporation unless such owners are **agents** of the corporation. For example, if you owned shares of Nike stock, you would not have the right to purchase inventory for the company unless you were designated as an agent of the corporation.

**Legal existence separate from owners**

## Limited Liability of Stockholders

Since a corporation is a separate legal entity, creditors have recourse only to corporate assets to satisfy their claims. The liability of stockholders is normally limited to their investment in the corporation. Creditors have no legal claim on the personal assets of the owners unless fraud has occurred. Even in the event of bankruptcy, stockholders' losses are generally limited to their capital investment in the corporation.

**Limited liability of stockholders**

## Transferable Ownership Rights

Shares of capital stock give ownership in a corporation. These shares are transferable units. Stockholders may dispose of part or all of their interest in a corporation simply by selling their stock. The transfer of an ownership interest in a partnership requires the consent of each owner. In contrast, the transfer of stock is entirely at the discretion of the stockholder. It does not require the approval of either the corporation or other stockholders.

The transfer of ownership rights between stockholders normally has no effect on the daily operating activities of the corporation. Nor does it affect the corporation's assets, liabilities, and total ownership equity. The transfer of these ownership rights is a transaction between individual owners. The company does not participate in the transfer of these ownership rights after the original sale of the capital stock.

**Transferable ownership rights**

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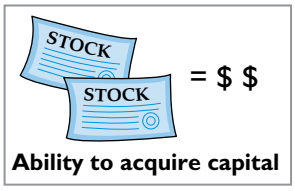
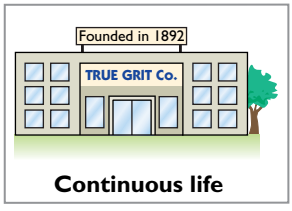



## Ability To Acquire Capital

It is relatively easy for a corporation to obtain capital through the issuance of stock. Buying stock in a corporation is often attractive to an investor because a stockholder has limited liability and shares of stock are readily transferable. Also, numerous individuals can become stockholders by investing relatively small amounts of money.




## Continuous Life

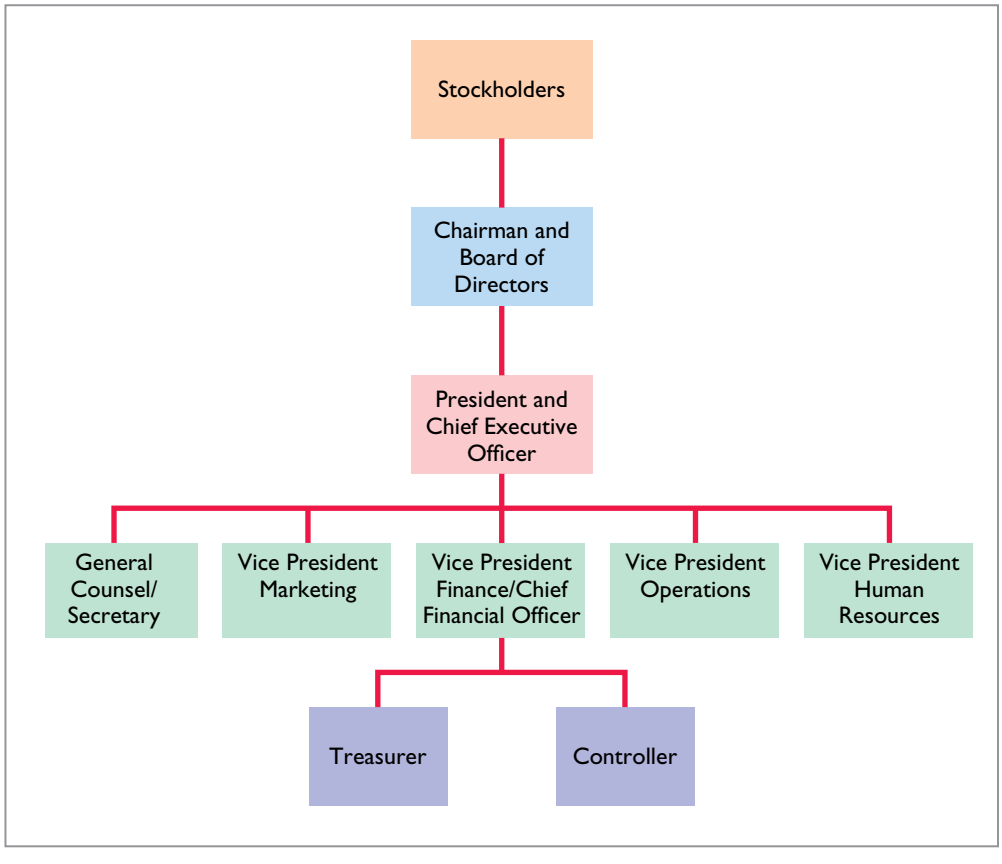
The life of a corporation is stated in its charter. The life may be perpetual, or it may be limited to a specific number of years. If it is limited, the company can extend the life through renewal of the charter. Since a corporation is a separate legal entity, its continuance as a going concern is not affected by the withdrawal, death, or incapacity of a stockholder, employee, or officer. As a result, a successful company can have a continuous and perpetual life.

## Corporation Management

Stockholders legally own the corporation. However, they manage the corporation indirectly through a board of directors they elect. For example, Phil Knight is the chairman of **Nike**. The board, in turn, formulates the operating policies for the company. The board also selects officers, such as a president and one or more vice presidents, to execute policy and to perform daily management functions. As a result of the Sarbanes-Oxley Act, the board is now required to monitor management's actions more closely. Many feel that the failures of **Enron**, **WorldCom**, and more recently **MF Global** could have been avoided by more diligent boards.

**Illustration 13.1** presents a typical organization chart showing the delegation of responsibility. The chief executive officer (CEO) has overall responsibility for managing the business. As the organization chart shows, the CEO delegates responsibility to other officers. The chief accounting officer is the **controller**. The controller's responsibilities include (1) maintaining the accounting records, (2) ensuring an adequate system of internal control, and (3) preparing financial statements, tax returns, and internal reports. The

**ILLUSTRATION 13.1**
**Corporation organization chart**



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**treasurer** has custody of the corporation's funds and is responsible for maintaining the company's cash position.

The organizational structure of a corporation enables a company to hire professional managers to run the business (see **Ethics Note**). On the other hand, the separation of ownership and management often reduces an owner's ability to actively manage the company.

### Government Regulations

A corporation is subject to numerous state and federal regulations. For example, state laws usually prescribe the requirements for issuing stock, the distributions of earnings permitted to stockholders, and the acceptable methods for buying back and retiring stock. Federal securities laws govern the sale of capital stock to the general public. Also, most publicly held corporations are required to make extensive disclosure of their financial affairs to the Securities and Exchange Commission (SEC) through quarterly and annual reports (Forms 10Q and 10K). In addition, when a corporation lists its stock on organized securities exchanges, it must comply with the reporting requirements of these exchanges. Government regulations are designed to protect the owners of the corporation.

### Additional Taxes

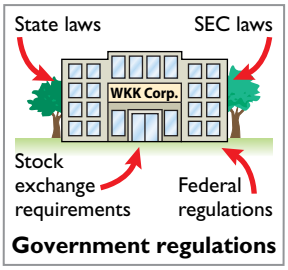
Owners of proprietorships and partnerships report their share of earnings on their personal income tax returns. The individual owner then pays taxes on this amount. Corporations, on the other hand, must pay federal and state income taxes **as a separate legal entity**. These taxes can be substantial. They can amount to as much as 40% of taxable income.

In addition, stockholders must pay taxes on cash dividends (pro rata distributions of net income). Thus, many argue that the government taxes corporate income **twice (double taxation)**—once at the corporate level and again at the individual level.

In summary, **Illustration 13.2** shows the advantages and disadvantages of a corporation compared to a proprietorship and a partnership.

**ETHICS NOTE**

**Managers who are not owners are often compensated based on the performance of the firm. They thus may be tempted to exaggerate firm performance by inflating income figures.**



**Government regulations**

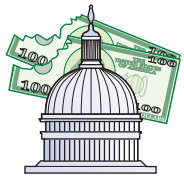

**Additional taxes**

**ILLUSTRATION 13.2**

**Advantages and disadvantages of a corporation**

| Advantages | Disadvantages |
|---|---|
| Separate legal existence | Corporation management—separation of ownership and management |
| Limited liability of stockholders | Government regulations |
| Transferable ownership rights | Additional taxes |
| Ability to acquire capital | |
| Continuous life | |
| Corporation management—professional managers | |

## Forming a Corporation

A corporation is formed by grant of a state **charter**. The charter is a document that describes the name and purpose of the corporation, the types and number of shares of stock that are authorized to be issued, the names of the individuals that formed the company, and the number of shares that these individuals agreed to purchase (see **Alternative Terminology**). Regardless of the number of states in which a corporation has operating divisions, it is incorporated in only one state.

It is to the company's advantage to incorporate in a state whose laws are favorable to the corporate form of business organization. For example, although **Facebook** has its headquarters in California, it is incorporated in Delaware. In fact, more and more corporations have been incorporating in states with rules that favor existing management. For example, **Gulf Oil** changed its state of incorporation to Delaware to thwart possible unfriendly takeovers. There, certain defensive tactics against takeovers can be approved by the board of directors alone, without a vote by shareholders.

Upon receipt of its charter from the state of incorporation, the corporation establishes **by-laws**. The by-laws establish the internal rules and procedures for conducting the affairs of the corporation. Corporations engaged in interstate commerce must also obtain a **license** from

**ALTERNATIVE TERMINOLOGY**

**The charter is often referred to as the *articles of incorporation*.**

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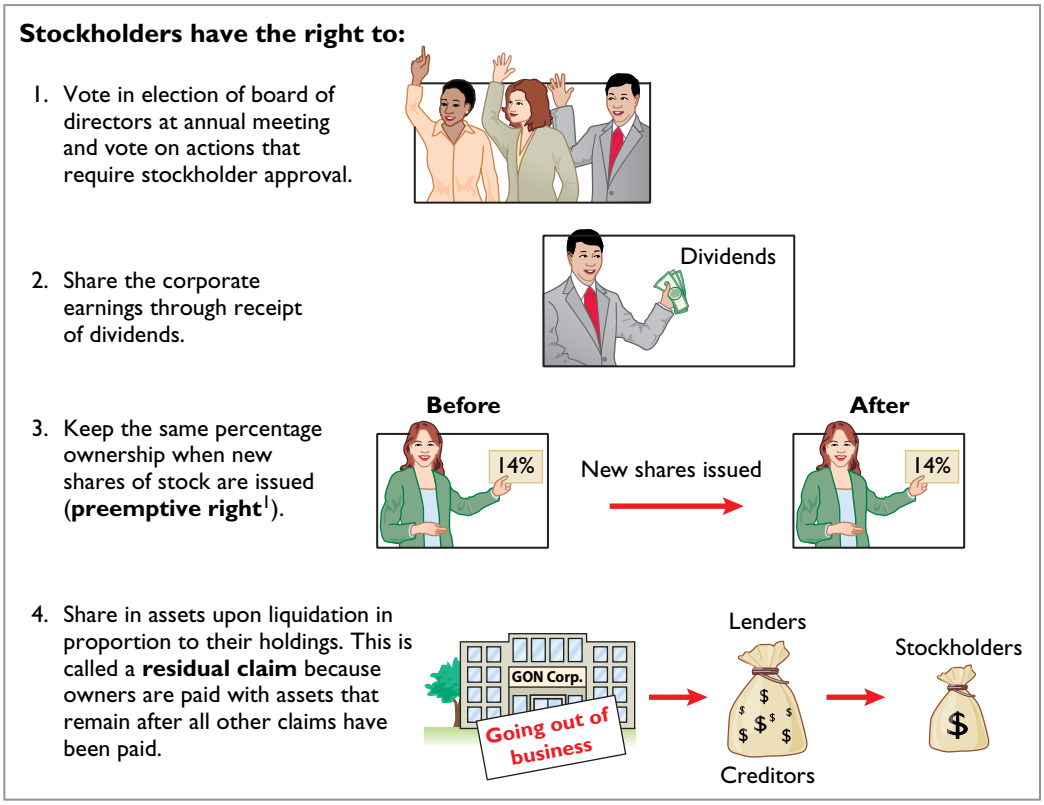
each state in which they do business. The license subjects the corporation's operating activities to the general corporation laws of the state.

Costs incurred in the formation of a corporation are called **organization costs**. These costs include legal and state fees, and promotional expenditures involved in the organization of the business. **Corporations expense organization costs as incurred.** Determining the amount and timing of future benefits is so difficult that it is standard procedure to take a conservative approach of expensing these costs immediately.

## Stockholder Rights

When chartered, the corporation may begin selling shares of stock. When a corporation has only one class of stock, it is **common stock**. Each share of common stock gives the stockholder the ownership rights pictured in Illustration 13.3. The articles of incorporation or the by-laws state the ownership rights of a share of stock.

**ILLUSTRATION 13.3** **Ownership rights of stockholders**


Stockholders have the right to:
1. Vote in election of board of directors at annual meeting and vote on actions that require stockholder approval.
2. Share the corporate earnings through receipt of dividends.
Dividends
3. Keep the same percentage ownership when new shares of stock are issued (preemptive right[1]).
Before
14%
New shares issued
After
14%
4. Share in assets upon liquidation in proportion to their holdings. This is called a residual claim because owners are paid with assets that remain after all other claims have been paid.
GON Corp.
Going out of business
Lenders
Creditors
Stockholders

Proof of stock ownership is evidenced by a form known as a **stock certificate**. As Illustration 13.4 shows, the face of the certificate shows the name of the corporation, the stockholder's name, the class and special features of the stock, the number of shares owned, and the signatures of authorized corporate officials. Prenumbered certificates facilitate accountability. They may be issued for any quantity of shares.

## Stock Issue Considerations

Although **Nike** incorporated in 1968, it did not sell stock to the public until 1980. At that time, Nike evidently decided it would benefit from the infusion of cash that a public sale would bring. When a corporation decides to issue stock, it must resolve a number of basic questions: How

[1]A number of companies have eliminated the preemptive right because they believe it makes an unnecessary and cumbersome demand on management. For example, by stockholder approval, **IBM** has dropped its preemptive right for stockholders.

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THE FRANKLIN LIFE INSURANCE COMPANY
SPRINGFIELD, ILLINOIS
This Certifies that
Joann R. Rodriguez
188 So. Water Street
Galena, Illinois
is the owner of
ONE HUNDRED
FULL PAID AND NON-ASSESSABLE SHARES OF THE PAR VALUE OF $2 EACH OF THE CAPITAL STOCK OF,
THE FRANKLIN LIFE INSURANCE COMPANY,
transferable on the books of the Company in person or by duly authorized attorney upon the surrender of this certificate properly endorsed. This certificate is not valid until countersigned by the Transfer Agent of said Company.
In Witness Whereof, the Company has caused this certificate to be authenticated by the facsimile signatures of its President and Secretary and its facsimile Corporate Seal to be affixed.
Dated
CORPORATE SEAL
THE FRANKLIN LIFE INSURANCE CO.
SPRINGFIELD ILL.

**ILLUSTRATION 13.4**
**A stock certificate**

many shares should it authorize for sale? How should it issue the stock? What value should the corporation assign to the stock? We address these questions in the following sections.

## Authorized Stock

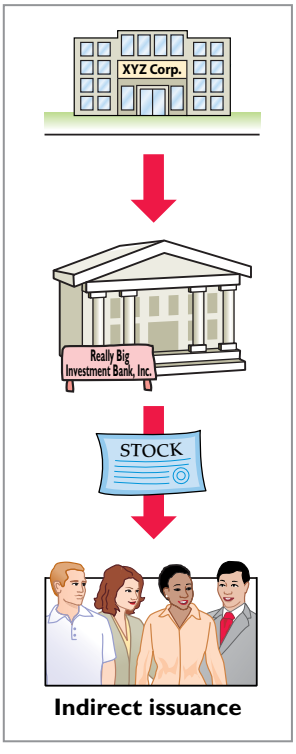
The charter indicates the amount of stock that a corporation is **authorized** to sell. The total amount of **authorized stock** at the time of incorporation normally anticipates both initial and subsequent capital needs. As a result, the number of shares authorized generally exceeds the number initially sold. If it sells all authorized stock, a corporation must obtain consent of the state to amend its charter before it can issue additional shares.

**The authorization of capital stock does not result in a formal accounting entry. The reason is that the event has no immediate effect on either corporate assets or stockholders' equity.** However, the number of authorized shares is often reported in the stockholders' equity section. It is then simple to determine the number of unissued shares that the corporation can issue without amending the charter: subtract the total shares issued from the total authorized. For example, if **Advanced Micro** was authorized to sell 100,000 shares of common stock and issued 80,000 shares, 20,000 shares would remain unissued.

## Issuance of Stock

A corporation can issue common stock **directly** to investors. Alternatively, it can issue the stock **indirectly** through an investment banking firm that specializes in bringing securities to the attention of prospective investors. Direct issue is typical in closely held companies. Indirect issue is customary for a publicly held corporation.

In an indirect issue, the investment banking firm may agree to **underwrite** the entire stock issue. In this arrangement, the investment banker buys the stock from the corporation at a stipulated price and resells the shares to investors. The corporation thus avoids any risk of being unable to sell the shares. Also, it obtains immediate use of the cash received from the underwriter. The investment banking firm, in turn, assumes the risk of reselling the shares, in return for an underwriting fee.[2] For example, **Google** used underwriters when it issued a highly successful initial public offering, raising $1.67 billion. The underwriters charged a 3% underwriting fee (approximately $50 million) on Google's stock offering.




**Indirect issuance**

[2]Alternatively, the investment banking firm may agree only to enter into a **best-efforts contract** with the corporation. In such cases, the banker agrees to sell as many shares as possible at a specified price. The corporation bears the risk of unsold stock. Under a best-efforts arrangement, the banking firm is paid a fee or commission for its services.

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How does a corporation set the price for a new issue of stock? Among the factors to be considered are (1) the company's anticipated future earnings, (2) its expected dividend rate per share, (3) its current financial position, (4) the current state of the economy, and (5) the current state of the securities market. The calculation can be complex and is properly the subject of a finance course.

## Anatomy of a Fraud

The president, chief operating officer, and chief financial officer of **SafeNet**, a software encryption company, were each awarded employee stock options by the company's board of directors as part of their compensation package. Stock options enable an employee to buy a company's stock sometime in the future at the price that existed when the stock option was awarded. For example, suppose that you received stock options today, when the stock price of your company was $30. Three years later, if the stock price rose to $100, you could "exercise" your options and buy the stock for $30 per share, thereby making $70 per share. After being awarded their stock options, the three employees changed the award dates in the company's records to dates in the past, when the company's stock was trading at historical lows. For instance, using the previous example, they would choose a past date when the stock was selling for $10 per share, rather than the $30 price on the actual award date. This would increase the profit from exercising the options to $90 per share.

### Total take: $1.7 million

#### THE MISSING CONTROL

**Independent internal verification.** The company's board of directors should have ensured that the awards were properly administered. For example, the date on the minutes from the board meeting could be compared to the dates that were recorded for the awards. In addition, the dates should again be confirmed upon exercise.

## Par and No-Par Value Stocks

**Par value stock** is capital stock to which the charter has assigned a value per share. Years ago, par value determined the **legal capital** per share that a company must retain in the business for the protection of corporate creditors. That amount was not available for withdrawal by stockholders. Thus, in the past, most states required the corporation to sell its shares at par or above.

However, par value was often immaterial relative to the value of the company's stock—even at the time of issue. Thus, its usefulness as a protective device to creditors was questionable. For example, **Facebook**'s par value is $0.000006 per share, yet its market price recently was $84. Thus, par has no relationship with market price. In the vast majority of cases, it is an immaterial amount. As a consequence, today many states do not require a par value. Instead, they use other means to protect creditors.

**No-par value stock** is capital stock to which the charter has not assigned a value. No-par value stock is fairly common today. For example, **Nike** and **Procter & Gamble** both have no-par stock. In many states, the board of directors assigns a **stated value** to no-par shares.

## DO IT! 1a | Corporate Organization

Indicate whether each of the following statements is true or false. If false, indicate how to correct the statement.

_____ **1.** Similar to partners in a partnership, stockholders of a corporation have unlimited liability.

_____ **2.** It is relatively easy for a corporation to obtain capital through the issuance of stock.

_____ **3.** The separation of ownership and management is an advantage of the corporate form of business.

_____ **4.** The journal entry to record the authorization of capital stock includes a credit to the appropriate capital stock account.

_____ **5.** All states require a par value per share for capital stock.

**ACTION PLAN**

- Review the characteristics of a corporation and understand which are advantages and which are disadvantages.
- Understand that corporations raise capital through the issuance of stock, which can be par or no-par.

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**Solution**

**1.** False. The liability of stockholders is normally limited to their investment in the corporation. **2.** True. **3.** False. The separation of ownership and management is a disadvantage of the corporate form of business. **4.** False. The authorization of capital stock does not result in a formal accounting entry. **5.** False. Many states do not require a par value.

Related exercise material: **BE13.1, DO IT! 13.1a, E13.1, and E13.2.**

# Corporate Capital

Owners' equity is identified by various names: **stockholders' equity**, **shareholders' equity**, or **corporate capital**. The stockholders' equity section of a corporation's balance sheet consists of two parts: (1) paid-in (contributed) capital and (2) retained earnings (earned capital).

The distinction between **paid-in capital** and **retained earnings** is important from both a legal and a financial point of view. Legally, corporations can make distributions of earnings (declare dividends) out of retained earnings in all states. However, in many states they cannot declare dividends out of paid-in capital. Management, stockholders, and others often look to retained earnings for the continued existence and growth of the corporation.

## Paid-In Capital

**Paid-in capital** is the total amount of cash and other assets paid in to the corporation by stockholders in exchange for capital stock. As noted earlier, when a corporation has only one class of stock, it is **common stock**.

## Retained Earnings

**Retained earnings** is net income that a corporation retains for future use. Net income is recorded in Retained Earnings by a closing entry that debits Income Summary and credits Retained Earnings. For example, assuming that net income for Delta Robotics in its first year of operations is $130,000, the closing entry is:

| | | | |
|---|---|---|---|
| Income Summary | 130,000 | | |
| Retained Earnings | | | 130,000 |
| (To close Income Summary and transfer net income to Retained Earnings) | | | |

| A | = | L | + | SE |
|---|---|---|---|---|
| | | | | −130,000 Inc |
| | | | | +130,000 RE |

**Cash Flows**
no effect

If Delta Robotics has a balance of $800,000 in common stock at the end of its first year, its stockholders' equity section is as shown in **Illustration 13.5**.

**ILLUSTRATION 13.5**
**Stockholders' equity section**

**Delta Robotics**
**Balance Sheet (partial)**

| | | |
|---|---|---|
| Stockholders' equity | | |
| **Paid-in capital** | | |
| Common stock | $800,000 | |
| **Retained earnings** | 130,000 | |
| Total stockholders' equity | | **$930,000** |

**Illustration 13.6** compares the owners' equity (stockholders' equity) accounts reported on a balance sheet for a proprietorship, a partnership, and a corporation.

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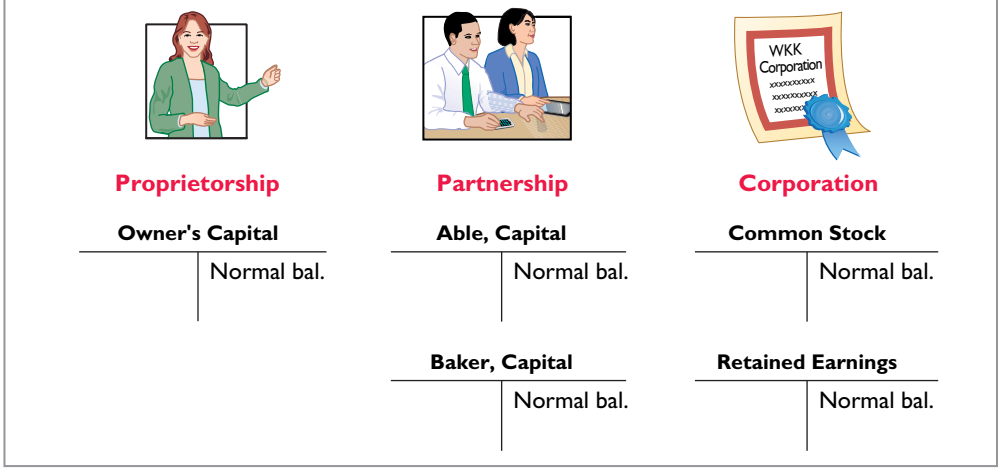
**ILLUSTRATION 13.6**
**Comparison of owners' equity accounts**




## DO IT! 1b | Corporate Capital

At the end of its first year of operation, Doral Corporation has $750,000 of common stock and net income of $122,000. Prepare (a) the closing entry for net income and (b) the stockholders' equity section at year-end.

**ACTION PLAN**

- Record net income in Retained Earnings by a closing entry in which Income Summary is debited and Retained Earnings is credited.
- In the stockholders' equity section, show (1) paid-in capital and (2) retained earnings.

### Solution

| | | | |
|---|---|---|---|
| **a.** | Income Summary | 122,000 | |
| | Retained Earnings | | 122,000 |
| | (To close Income Summary and transfer net income to Retained Earnings) | | |
| **b.** | Stockholders' equity | | |
| | Paid-in capital | | |
| | Common stock | $750,000 | |
| | Retained earnings | 122,000 | |
| | Total stockholders' equity | | $872,000 |

Related exercise material: **BE13.2 and DO IT! 13.1b.**

# Accounting for Stock Transactions

**LEARNING OBJECTIVE 2**
Explain how to account for common, preferred, and treasury stock.

## Accounting for Common Stock

Let's now look at how to account for issues of common stock. The primary objectives in accounting for the issuance of common stock are (1) to identify the specific sources of paid-in capital, and (2) to maintain the distinction between paid-in capital and retained earnings. **The issuance of common stock affects only paid-in capital accounts.**

### Issuing Par Value Common Stock for Cash

As discussed earlier, par value does not indicate a stock's market price. Therefore, the cash proceeds from issuing par value stock may be equal to, greater than, or less than par value.

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When the company records issuance of common stock for cash, it credits the par value of the shares to Common Stock. It also records in a separate paid-in capital account the portion of the proceeds that is above or below par value.

To illustrate, assume that Hydro-Slide, Inc. issues 1,000 shares of $1 par value common stock at par for cash. The entry to record this transaction is as follows.

| | | |
|---|---|---|
| Cash | 1,000 | |
| Common Stock | | 1,000 |
| (To record issuance of 1,000 shares of $1 par common stock at par) | | |

A = L + SE
+1,000
+1,000 CS

Cash Flows
+1,000

Now assume that Hydro-Slide issues an additional 1,000 shares of the $1 par value common stock for cash at $5 per share. The amount received above the par value, in this case $4 ($5 – $1), is credited to Paid-in Capital in Excess of Par—Common Stock. The entry is as follows.

| | | |
|---|---|---|
| Cash | 5,000 | |
| Common Stock | | 1,000 |
| Paid-in Capital in Excess of Par—Common Stock | | 4,000 |
| (To record issuance of 1,000 shares of $1 par common stock) | | |

A = L + SE
+5,000
+1,000 CS
+4,000 CS

Cash Flows
+5,000

The total paid-in capital from these two transactions is $6,000, and the legal capital is $2,000. Assuming Hydro-Slide, Inc. has retained earnings of $27,000, **Illustration 13.7** shows the company's stockholders' equity section.

**Hydro-Slide, Inc.**
**Balance Sheet (partial)**

| | |
|---|---|
| Stockholders' equity | |
| Paid-in capital | |
| Common stock | $ 2,000 |
| **In excess of par—common stock** | **4,000** |
| Total paid-in capital | 6,000 |
| Retained earnings | 27,000 |
| Total stockholders' equity | $33,000 |

**ILLUSTRATION 13.7**
**Stockholders' equity—paid-in capital in excess of par**

When a corporation issues stock for less than par value, it debits the account Paid-in Capital in Excess of Par—Common Stock if a credit balance exists in this account (see **Alternative Terminology**). If a credit balance does not exist, then the corporation debits to Retained Earnings the amount less than par. This situation occurs only rarely. Most states do not permit the sale of common stock below par value because stockholders may be held personally liable for the difference between the price paid upon original sale and par value.

**ALTERNATIVE TERMINOLOGY**
**Paid-in Capital in Excess of Par is also called *Premium on Stock*.**

## Issuing No-Par Common Stock for Cash

When no-par common stock has a stated value, the entries are similar to those illustrated for par value stock. The corporation credits the stated value to Common Stock. Also, when the selling price of no-par stock exceeds stated value, the corporation credits the excess to Paid-in Capital in Excess of Stated Value—Common Stock.

For example, assume that instead of $1 par value stock, Hydro-Slide, Inc. has $5 stated value no-par stock and the company issues 5,000 shares at $8 per share for cash. The entry is as follows.

| | | |
|---|---|---|
| Cash | 40,000 | |
| Common Stock | | 25,000 |
| Paid-in Capital in Excess of Stated Value—Common Stock | | 15,000 |
| (To record issue of 5,000 shares of $5 stated value no-par stock) | | |

A = L + SE
+40,000
+25,000 CS
+15,000 CS

Cash Flows
+40,000

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Hydro-Slide, Inc. reports Paid-in Capital in Excess of Stated Value—Common Stock as part of paid-in capital in the stockholders' equity section.

What happens when no-par stock does not have a stated value? In that case, the corporation credits the entire proceeds to Common Stock. Thus, if Hydro-Slide does not assign a stated value to its no-par stock, it records the issuance of the 5,000 shares at $8 per share for cash as follows.

A = L + SE
+40,000
+40,000 CS

**Cash Flows**
+40,000

| | | |
|---|---|---|
| Cash | 40,000 | |
| Common Stock | | 40,000 |
| (To record issue of 5,000 shares of no-par stock) | | |

## Issuing Common Stock for Services or Noncash Assets

Corporations also may issue stock for services (compensation to attorneys or consultants) or for noncash assets (land, buildings, and equipment). In such cases, what cost should be recognized in the exchange transaction? To comply with the **historical cost principle**, in a noncash transaction **cost is the cash equivalent price**. Thus, **cost is either the fair value of the consideration given up or the fair value of the consideration received**, whichever is more clearly determinable.

To illustrate, assume that attorneys have helped Jordan Company incorporate. They have billed the company $5,000 for their services. They agree to accept 4,000 shares of $1 par value common stock in payment of their bill. At the time of the exchange, there is no established market price for the stock. In this case, the fair value of the consideration received, $5,000, is more clearly evident. Accordingly, Jordan Company makes the following entry.

A = L + SE
–5,000 Exp
+4,000 CS
+1,000 CS

**Cash Flows**
no effect

| | | |
|---|---|---|
| Organization Expense | 5,000 | |
| Common Stock | | 4,000 |
| Paid-in Capital in Excess of Par—Common Stock | | 1,000 |
| (To record issuance of 4,000 shares of $1 par value stock to attorneys) | | |

As explained previously, organization costs are expensed as incurred.

In contrast, assume that Athletic Research Inc. is an existing publicly held corporation. Its $5 par value stock is actively traded at $8 per share. The company issues 10,000 shares of stock to acquire land recently advertised for sale at $90,000. The most clearly evident value in this noncash transaction is the market price of the consideration given, $80,000. The company records the transaction as follows.

A = L + SE
+80,000
+50,000 CS
+30,000 CS

**Cash Flows**
no effect

| | | |
|---|---|---|
| Land | 80,000 | |
| Common Stock | | 50,000 |
| Paid-in Capital in Excess of Par—Common Stock | | 30,000 |
| (To record issuance of 10,000 shares of $5 par value stock for land) | | |

As illustrated in these examples, **the par value of the stock is never a factor in determining the cost of the assets or services received in noncash transactions**. This is also true of the stated value of no-par stock.

# Accounting for Preferred Stock

To appeal to a larger segment of potential investors, a corporation may issue an additional class of stock, called preferred stock. **Preferred stock** has contractual provisions that give it some preference or priority over common stock. Typically, preferred stockholders have a priority as to (1) distributions of earnings (dividends) and (2) assets in the event of liquidation. However, they generally do not have voting rights.

Like common stock, corporations may issue preferred stock for cash or for noncash assets. The entries for these transactions are similar to the entries for common stock. When a corporation has more than one class of stock, each paid-in capital account title should identify the stock to which it relates. A company might have the following accounts: Preferred Stock, Common Stock, Paid-in Capital in Excess of Par—Preferred Stock, and Paid-in Capital in Excess of Par—Common Stock.

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For example, if Stine Corporation issues 10,000 shares of $10 par value preferred stock for $12 cash per share, the entry to record the issuance is as follows.

| | | | |
|---|---|---|---|
| Cash | | 120,000 | |
| Preferred Stock | | | 100,000 |
| Paid-in Capital in Excess of Par—Preferred Stock | | | 20,000 |
| (To record the issuance of 10,000 shares of $10 par value preferred stock) | | | |

| A | = | L | + | SE |
|---|---|---|---|---|
| +120,000 | | | | +100,000 PS<br>+20,000 PS |

Cash Flows
+120,000

Preferred stock may have either a par value or no-par value. In the stockholders' equity section of the balance sheet, companies list preferred stock first because of its dividend and liquidation preferences over common stock.

## Investor Insight Facebook

Emmanuel Dunand/AFP/Getty Images

### How to Read Stock Quotes

Organized exchanges trade the stock of publicly held companies at dollar prices per share established by the interaction between buyers and sellers. For each listed security, the financial press reports the high and low prices of the stock during the year, the total volume of stock traded on a given day, the high and low prices for the day, and the closing market price, with the net change for the day. **Facebook** is listed on the Nasdaq exchange. Here is a recent listing for Facebook:

| | 52 Weeks | | | | | | |
|---|---|---|---|---|---|---|---|
| Stock | High | Low | Volume | High | Low | Close | Net Change |
| Facebook | 86.07 | 54.66 | 54,156,600 | 85.59 | 83.11 | 84.63 | .629 |

These numbers indicate the following. The high and low market prices for the last 52 weeks have been $86.07 and $54.66. The trading volume for the day was 54,156,600 shares. The high, low, and closing prices for that date were $85.59, $83.11, and $84.63, respectively. The net change for the day was a decrease of $0.629 per share.

**For stocks traded on organized exchanges, how are the dollar prices per share established? What factors might influence the price of shares in the marketplace? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 2a | Issuance of Stock

Cayman Corporation begins operations on March 1 by issuing 100,000 shares of $1 par value common stock for cash at $12 per share. On March 15, it issues 5,000 shares of common stock to attorneys in settlement of their bill of $50,000 for organization costs. On March 28, Cayman Corporation issues 1,500 shares of $10 par value preferred stock for cash at $30 per share. Journalize the issuance of the common and preferred shares, assuming the shares are not publicly traded.

### Solution

| | | | | |
|---|---|---|---|---|
| Mar. 1 | Cash | | 1,200,000 | |
| | Common Stock (100,000 × $1) | | | 100,000 |
| | Paid-in Capital in Excess of Par—Common Stock | | | 1,100,000 |
| | (To record issuance of 100,000 shares at $12 per share) | | | |
| Mar. 15 | Organization Expense | | 50,000 | |
| | Common Stock (5,000 × $1) | | | 5,000 |
| | Paid-in Capital in Excess of Par—Common Stock | | | 45,000 |
| | (To record issuance of 5,000 shares for attorneys' fees) | | | |
| Mar. 28 | Cash | | 45,000 | |
| | Preferred Stock (1,500 × $10) | | | 15,000 |
| | Paid-in Capital in Excess of Par—Preferred Stock | | | 30,000 |
| | (To record issuance of 1,500 shares at $30 per share) | | | |

### ACTION PLAN

- In issuing shares for cash, credit Common Stock for par value per share.
- Credit any additional proceeds in excess of par to a separate paid-in capital account.
- When stock is issued for services, use the cash equivalent price.
- For the cash equivalent price, use either the fair value of what is given up or the fair value of what is received, whichever is more clearly determinable.

Related exercise material: **BE13.3, BE13.4, BE13.5, BE13.6, DO IT! 13.2a, E13.3, E13.4, and E13.6.**

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# Accounting for Treasury Stock

**HELPFUL HINT**
**Treasury shares do not have dividend rights or voting rights.**

**Treasury stock** is a corporation's own stock that it has issued and subsequently reacquired from shareholders but not retired (see **Helpful Hint**). A corporation may acquire treasury stock for various reasons:

1. To reissue the shares to officers and employees under bonus and stock compensation plans.
2. To increase trading of the company's stock in the securities market. Companies expect that buying their own stock will signal that management believes the stock is underpriced, which they hope will enhance its market price.
3. To have additional shares available for use in the acquisition of other companies.
4. To reduce the number of shares outstanding and thereby increase earnings per share.

A less infrequent reason for purchasing treasury shares is that management may want to eliminate hostile shareholders by buying them out.

Many corporations have treasury stock. For example, approximately 65% of U.S. companies have treasury stock. In a recent year, **Nike** purchased more than 6 million treasury shares.

## Purchase of Treasury Stock

Companies generally account for treasury stock by **the cost method**. This method uses the cost of the shares purchased to value the treasury stock. Under the cost method, the company debits **Treasury Stock** for the **price paid to reacquire the shares**. When the company disposes of the shares, it credits to Treasury Stock **the same amount** it paid to reacquire the shares.

To illustrate, assume that on January 1, 2020, the stockholders' equity section of Mead, Inc. has 400,000 shares authorized and 100,000 shares of $5 par value common stock outstanding (all issued at par value) and Retained Earnings of $200,000. The stockholders' equity section before purchase of treasury stock is shown in **Illustration 13.8**.

**ILLUSTRATION 13.8**
**Stockholders' equity with no treasury stock**

**Mead, Inc.**
**Balance Sheet (partial)**

| | |
|---|---|
| Stockholders' equity | |
| Paid-in capital | |
| Common stock, $5 par value, 400,000 shares authorized, 100,000 shares issued and outstanding | $500,000 |
| Retained earnings | 200,000 |
| Total stockholders' equity | $700,000 |

On February 1, 2020, Mead acquires 4,000 shares of its stock at $8 per share. The entry is as follows.

A = L + SE
–32,000 TS
–32,000
**Cash Flows**
–32,000

| | | | |
|---|---|---|---|
| Feb. 1 | Treasury Stock | 32,000 | |
| | Cash | | 32,000 |
| | (To record purchase of 4,000 shares of treasury stock at $8 per share) | | |

Mead debits Treasury Stock for the cost of the shares purchased ($32,000). Is the original paid-in capital account, Common Stock, affected? No, because **the number of issued shares does not change**.

In the stockholders' equity section of the balance sheet, Mead deducts treasury stock from total paid-in capital and retained earnings. Treasury Stock is a **contra stockholders' equity account**. Thus, the acquisition of treasury stock reduces stockholders' equity. The stockholders' equity section of Mead, Inc. after purchase of treasury stock is shown in **Illustration 13.9**.

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**Mead, Inc.**
**Balance Sheet (partial)**

| | |
|---|---|
| Stockholders' equity | |
| Paid-in capital | |
| Common stock, $5 par value, 400,000 shares authorized, 100,000 shares issued, and 96,000 shares outstanding | $500,000 |
| Retained earnings | 200,000 |
| Total paid-in capital and retained earnings | 700,000 |
| **Less: Treasury stock (4,000 shares)** | **32,000** |
| Total stockholders' equity | $668,000 |

**ILLUSTRATION 13.9**
**Stockholders' equity with treasury stock**

Mead discloses in the balance sheet both the number of shares issued (100,000) and the number in the treasury (4,000). The difference is the number of shares of stock outstanding (96,000). The term **outstanding stock** means the number of shares of issued stock that are being held by stockholders.

Some maintain that companies should report treasury stock as an asset because it can be sold for cash. But under this reasoning, companies would also show unissued stock as an asset, which is clearly incorrect. Rather than being an asset, treasury stock reduces stockholder claims on corporate assets (see **Ethics Note**). This effect is correctly shown by reporting treasury stock as a deduction from total paid-in capital and retained earnings.

**ETHICS NOTE**
**The purchase of treasury stock reduces the cushion for creditors. To protect creditors, many states require that a portion of retained earnings equal to the cost of the treasury stock purchased be restricted from being paid as dividends.**

## Disposal of Treasury Stock

Treasury stock is usually sold or retired. The accounting for its sale differs when treasury stock is sold above cost than when it is sold below cost (see **Helpful Hint**).

**HELPFUL HINT**
**Treasury stock transactions are classified as capital stock transactions. As in the case when stock is issued, the income statement is not involved.**

**Sale of Treasury Stock Above Cost.** If the selling price of the treasury shares is equal to their cost, the company records the sale of the shares by a debit to Cash and a credit to Treasury Stock. When the selling price of the shares is greater than their cost, the company credits the difference to Paid-in Capital from Treasury Stock.

To illustrate, assume that on July 1, Mead, Inc. sells for $10 per share 1,000 of the 4,000 shares of its treasury stock previously acquired at $8 per share. The entry is as follows.

| | | | |
|---|---|---|---|
| July 1 | Cash | 10,000 | |
| | Treasury Stock | | 8,000 |
| | Paid-in Capital from Treasury Stock | | 2,000 |
| | (To record sale of 1,000 shares of treasury stock above cost) | | |

A = L + SE
+10,000
+8,000 TS
+2,000 TS
Cash Flows
+10,000

Mead does not record a $2,000 gain on sale of treasury stock for two reasons. (1) Gains on sales occur when **assets** are sold, and treasury stock is not an asset. (2) A corporation does not realize a gain or suffer a loss from stock transactions with its own stockholders. Thus, companies should **not** include in net income any paid-in capital arising from the sale of treasury stock. Instead, they report Paid-in Capital from Treasury Stock separately on the balance sheet, as a part of paid-in capital.

**Sale of Treasury Stock Below Cost.** When a company sells treasury stock below its cost, it usually debits to Paid-in Capital from Treasury Stock the excess of cost over selling price. Thus, if Mead, Inc. sells an additional 800 shares of treasury stock on October 1 at $7 per share, it makes the following entry.

| | | | |
|---|---|---|---|
| Oct. 1 | Cash (800 × $7) | 5,600 | |
| | Paid-in Capital from Treasury Stock | 800 | |
| | Treasury Stock | | 6,400 |
| | (To record sale of 800 shares of treasury stock below cost) | | |

A = L + SE
+5,600
–800 TS
+6,400 TS
Cash Flows
+5,600

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Observe the following from the two sales entries. (1) Mead credits Treasury Stock at cost in each entry. (2) Mead uses Paid-in Capital from Treasury Stock for the difference between cost and the resale price of the shares. (3) The original paid-in capital account, Common Stock, is not affected. **The sale of treasury stock increases both total assets and total stockholders' equity.**

After posting the foregoing entries, the treasury stock accounts will have the balances shown in **Illustration 13.10** on October 1.

**ILLUSTRATION 13.10**
**Treasury stock accounts**

| Treasury Stock | | | | | |
|---|---|---|---|---|---|
| Feb. 1 | | 32,000 | July 1 | | 8,000 |
| | | | Oct. 1 | | 6,400 |
| Oct. 1 | Bal. | 17,600 | | | |

| Paid-in Capital from Treasury Stock | | | | | |
|---|---|---|---|---|---|
| Oct. 1 | | 800 | July 1 | | 2,000 |
| | | | Oct. 1 | Bal. | 1,200 |

When a company fully depletes the credit balance in Paid-in Capital from Treasury Stock, it debits to Retained Earnings any additional excess of cost over selling price. To illustrate, assume that Mead, Inc. sells its remaining 2,200 shares at $7 per share on December 1. The excess of cost over selling price is $2,200 [2,200 × ($8 – $7)]. In this case, Mead debits $1,200 of the excess to Paid-in Capital from Treasury Stock. It debits the remainder to Retained Earnings. The entry is as follows.

A = L + SE
+15,400
–1,200 TS
–1,000 RE
+17,600 TS

**Cash Flows**
+15,400

| | | | |
|---|---|---|---|
| Dec. 1 | Cash (2,200 × $7) | 15,400 | |
| | Paid-in Capital from Treasury Stock | 1,200 | |
| | Retained Earnings | 1,000 | |
| | Treasury Stock | | 17,600 |
| | (To record sale of 2,200 shares of treasury stock at $7 per share) | | |

## Accounting Across the Organization Reebok

Han Myung-Gu/WireImage/Getty Images, Inc

### A Bold Repurchase Strategy

In a bold (and some would say risky) move, **Reebok** at one time bought back nearly a third of its shares. This repurchase of shares dramatically reduced Reebok's available cash. In fact, the company borrowed significant funds to accomplish the repurchase. In a press release, management stated that it was repurchasing the shares because it believed its stock was severely underpriced. The repurchase of so many shares was meant to signal management's belief in good future earnings.

Skeptics, however, suggested that Reebok's management was repurchasing shares to make it less likely that another company would acquire Reebok (in which case Reebok's top managers would likely lose their jobs). By depleting its cash, Reebok became a less attractive acquisition target. Acquiring companies like to purchase companies with large cash balances so they can pay off debt used in the acquisition.

**What signal might a large stock repurchase send to investors regarding management's belief about the company's growth opportunities? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 2b | Treasury Stock

Santa Anita Inc. purchases 3,000 shares of its $50 par value common stock for $180,000 cash on July 1. It will hold the shares in the treasury until resold. On November 1, the corporation sells 1,000 shares of treasury stock for cash at $70 per share. Journalize the treasury stock transactions.

**ACTION PLAN**
- Record the purchase of treasury stock at cost.

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**Solution**

| | | | | |
|---|---|---|---|---|
| July 1 | Treasury Stock | | 180,000 | |
| | Cash | | | 180,000 |
| | (To record the purchase of 3,000 shares at $60 per share) | | | |
| Nov. 1 | Cash | | 70,000 | |
| | Treasury Stock | | | 60,000 |
| | Paid-in Capital from Treasury Stock | | | 10,000 |
| | (To record the sale of 1,000 shares at $70 per share) | | | |

Related exercise material: **BE13.7, DO IT! 13.2b, E13.5, E13.7, and E13.8.**

- **When treasury stock is sold above its cost, credit the excess of the selling price over cost to Paid-in Capital from Treasury Stock.**
- **When treasury stock is sold below its cost, debit the excess of cost over selling price to Paid-in Capital from Treasury Stock.**

# Statement Presentation of Stockholders' Equity

**LEARNING OBJECTIVE 3**

Prepare a stockholders' equity section.

In the stockholders' equity section of the balance sheet, companies report paid-in capital, retained earnings, accumulated other comprehensive income, and treasury stock. Within paid-in capital, two classifications are recognized:

1. **Capital stock**, which consists of preferred and common stock. Companies show preferred stock before common stock because of its preferential rights. They report information about the par value, shares authorized, shares issued, and shares outstanding for each class of stock.
2. **Additional paid-in capital**, which includes the excess of amounts paid in over par or stated value.

As discussed in Chapter 5, in some instances unrealized gains and losses are not included in net income. Instead, these excluded items, referred to as other comprehensive income items, are reported as part of a more inclusive earnings measure called comprehensive income. Examples of other comprehensive income items include certain adjustments to pension plan assets, types of foreign currency gains and losses, and some gains and losses on investments. The items reported as other comprehensive income are closed each year to the **Accumulated Other Comprehensive Income** account. Thus, this account includes the cumulative amount of all previous items reported as other comprehensive income. This account can have either a debit or credit balance depending on whether or not accumulated gains exceed accumulated losses over the years. If accumulated losses exceed gains, then the company reports accumulated other comprehensive loss.

**Illustration 13.11** presents the stockholders' equity section of the balance sheet of Graber Inc. (see **International Note**). The stockholders' equity section for Graber Inc. includes most of the accounts discussed in this chapter. The disclosures pertaining to Graber's common stock indicate that 400,000 shares are issued, 100,000 shares are unissued (500,000 authorized less 400,000 issued), and 390,000 shares are outstanding (400,000 issued less 10,000 shares in treasury).

**INTERNATIONAL NOTE**

**Like GAAP, under IFRS companies typically disclose separate categories of capital on the balance sheet. However, because of varying accounting treatments of certain transactions (such as treasury stock or asset revaluations), some categories used under IFRS vary from those under GAAP.**

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**ILLUSTRATION 13.11**
**Stockholders' equity section of balance sheet**

**Graber Inc.**
**Balance Sheet (partial)**

| | | |
|---|---|---|
| Stockholders' equity | | |
| Paid-in capital | | |
| Capital stock | | |
| 9% preferred stock, $100 par value, cumulative, 10,000 shares authorized, 6,000 shares issued and outstanding | $ 600,000 | |
| Common stock, no par, $5 stated value, 500,000 shares authorized, 400,000 shares issued, and 390,000 outstanding | 2,000,000 | |
| Total capital stock | | $2,600,000 |
| Additional paid-in capital | | |
| In excess of par—preferred stock | 30,000 | |
| In excess of stated value—common stock | 1,050,000 | |
| Total additional paid-in capital | | 1,080,000 |
| Total paid-in capital | | 3,680,000 |
| Retained earnings | | 1,050,000 |
| Total paid-in capital and retained earnings | | 4,730,000 |
| Accumulated other comprehensive income | | 110,000 |
| Less: Treasury stock (10,000 common shares) | | 80,000 |
| Total stockholders' equity | | $4,760,000 |

## DO IT! 3 | Reporting Stockholders' Equity

Jennifer Corporation has issued 300,000 shares of $3 par value common stock. It is authorized to issue 600,000 shares. The paid-in capital in excess of par value on the common stock is $380,000. The corporation has reacquired 15,000 shares at a cost of $50,000 and is currently holding those shares. It also had a cumulative other comprehensive loss of $82,000.

The corporation also has 4,000 shares issued and outstanding of 8%, $100 par value preferred stock. It is authorized to issue 10,000 shares. The paid-in capital in excess of par value on the preferred stock is $97,000. Retained earnings is $610,000.

Prepare the stockholders' equity section of the balance sheet.

**ACTION PLAN**

- Present capital stock first; list preferred stock before common stock.
- Present additional paid-in capital after capital stock.
- Report retained earnings after capital stock and additional paid-in capital.
- Deduct treasury stock from total paid-in capital and retained earnings.

**Solution**

**Jennifer Corporation**
**Balance Sheet (partial)**

| | | |
|---|---|---|
| Stockholders' equity | | |
| Paid-in capital | | |
| Capital stock | | |
| 8% preferred stock, $100 par value, 10,000 shares authorized, 4,000 shares issued and outstanding | $400,000 | |
| Common stock, $3 par value, 600,000 shares authorized, 300,000 shares issued, and 285,000 shares outstanding | 900,000 | |
| Total capital stock | | $1,300,000 |
| Additional paid-in capital | | |
| In excess of par—preferred stock | 97,000 | |
| In excess of par value—common stock | 380,000 | |
| Total additional paid-in capital | | 477,000 |
| Total paid-in capital | | 1,777,000 |

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| | |
|---|---|
| Retained earnings | 610,000 |
| Total paid-in capital and retained earnings | 2,387,000 |
| Accumulated other comprehensive loss | 82,000 |
| Less: Treasury stock (15,000 common shares) (at cost) | 50,000 |
| Total stockholders' equity | $2,255,000 |

Related exercise material: **BE13.8, DO IT! 13.3, E13.9, E13.11, E13.12, E13.13, and E13.14.**

# Review and Practice

## Learning Objectives Review

### 1 Discuss the major characteristics of a corporation.

The major characteristics of a corporation are separate legal existence, limited liability of stockholders, transferable ownership rights, ability to acquire capital, continuous life, corporation management, government regulations, and additional taxes.

Paid-in capital is the total amount paid in on capital stock. It is often called contributed capital. Retained earnings is net income retained in a corporation. It is often called earned capital.

### 2 Explain how to account for common, preferred, and treasury stock.

**Common Stock.** When companies record the issuance of common stock for cash, they credit the par value of the shares to Common Stock. They record in a separate paid-in capital account the portion of the proceeds that is above or below par value. When no-par common stock has a stated value, the entries are similar to those for par value stock. When no-par stock does not have a stated value, companies credit the entire proceeds to Common Stock.

**Preferred Stock.** Preferred stock has contractual provisions that give it priority over common stock in certain areas. Typically, preferred stockholders have preferences (1) to dividends and (2) to assets in liquidation. They usually do not have voting rights.

**Treasury Stock.** The cost method is generally used in accounting for treasury stock. Under this approach, companies debit Treasury Stock at the price paid to reacquire the shares. They credit the same amount to Treasury Stock when they sell the shares. The difference between the sales price and cost is recorded in stockholders' equity accounts, not in income statement accounts.

### 3 Prepare a stockholders' equity section.

In the stockholders' equity section, companies report paid-in capital and retained earnings and identify specific sources of paid-in capital. Within paid-in capital, two classifications are shown: capital stock and additional paid-in capital. If a corporation has treasury stock, it deducts the cost of treasury stock from total paid-in capital and retained earnings to obtain total stockholders' equity.

## Glossary Review

**Accumulated Other Comprehensive Income** This account includes the cumulative amount of all previous items reported as other comprehensive income. (p. 13-17).

**Authorized stock** The amount of stock that a corporation is authorized to sell as indicated in its charter. (p. 13-7).

**Charter** A document that is issued by the state to set forth important terms and features regarding the creation of a corporation. (p. 13-5).

**Corporation** A business organized as a legal entity separate and distinct from its owners under state corporation law. (p. 13-2).

**No-par value stock** Capital stock that has not been assigned a value in the corporate charter. (p. 13-8).

**Organization costs** Costs incurred in the formation of a corporation. (p. 13-6).

**Outstanding stock** Capital stock that has been issued and is being held by stockholders. (p. 13-15).

**Paid-in capital** Total amount of cash and other assets paid in to the corporation by stockholders in exchange for capital stock. (p. 13-9).

**Par value stock** Capital stock that has been assigned a value per share in the corporate charter. (p. 13-8).

**Preferred stock** Capital stock that has some preferences over common stock. (p. 13-12).

**Privately held corporation** A corporation that has only a few stockholders and whose stock is not available for sale to the general public. (p. 13-3).

**Publicly held corporation** A corporation that may have thousands of stockholders and whose stock is regularly traded on a national securities exchange. (p. 13-3).

**Retained earnings** Net income that the corporation retains for future use. (p. 13-9).

**Stated value** The amount per share assigned by the board of directors to no-par value stock. (p. 13-8).

**Treasury stock** A corporation's own stock that has been issued and subsequently reacquired from shareholders by the corporation but not retired. (p. 13-14).

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## Practice Multiple-Choice Questions

**1. (LO 1)** Which of the following is **not** a major advantage of a corporate form of organization?

**a.** Separate legal existence.
**b.** Continuous life.
**c.** Government regulations.
**d.** Transferable ownership rights.

**2. (LO 1)** A major **disadvantage** of a corporation is:

**a.** limited liability of stockholders.
**b.** additional taxes.
**c.** transferable ownership rights.
**d.** separate legal existence.

**3. (LO 1)** Costs incurred in the formation of a corporation:

**a.** do not include legal fees.
**b.** are expensed as incurred.
**c.** are recorded as an asset.
**d.** provide future benefits whose amounts and timing are easily determined.

**4. (LO 1)** Which of the following statements is **false**?

**a.** Ownership of common stock gives the owner a voting right.
**b.** The stockholders' equity section begins with paid-in capital.
**c.** The authorization of capital stock does not result in a formal accounting entry.
**d.** Legal capital per share applies to par value stock but not to no-par value stock.

**5. (LO 1)** Total stockholders' equity (in the absence of treasury stock) equals:

**a.** Total paid-in capital + Retained earnings.
**b.** Paid-in capital + Capital stock + Retained earnings.
**c.** Capital stock + Additional paid-in capital − Retained earnings.
**d.** Common stock + Retained earnings.

**6. (LO 1)** The account Retained Earnings is:

**a.** a subdivision of paid-in capital.
**b.** net income retained in the corporation.
**c.** reported as an expense in the income statement.
**d.** closed to capital stock.

**7. (LO 2)** A-Team Corporation issued 1,000 shares of $5 par value stock for land. The stock is actively traded at $9 per share. The land was advertised for sale at $10,500. The land should be recorded at:

**a.** $4,000.
**b.** $5,000.
**c.** $9,000.
**d.** $10,500.

**8. (LO 2)** ABC Corporation issues 1,000 shares of $10 par value common stock at $13 per share. In recording the transaction, credits are made to:

**a.** Common Stock $10,000 and Paid-in Capital in Excess of Stated Value $3,000.
**b.** Common Stock $13,000.
**c.** Common Stock $10,000 and Paid-in Capital in Excess of Par $3,000.
**d.** Common Stock $10,000 and Retained Earnings $3,000.

**9. (LO 2)** Lucroy Corporation issues 100 shares of $10 par value preferred stock at $12 per share. In recording the transaction, credits are made to:

**a.** Preferred Stock $1,200.
**b.** Preferred Stock $1,000 and Retained Earnings $200.
**c.** Preferred Stock $1,000 and Paid-in Capital in Excess of Preferred Value $200.
**d.** Preferred Stock $1,000 and Paid-in Capital in Excess of Par—Preferred Stock $200.

**10. (LO 2)** Treasury stock may be repurchased:

**a.** to reissue the shares to officers and employees under bonus and stock compensation plans.
**b.** to signal to the stock market that management believes the stock is underpriced.
**c.** to have additional shares available for use in the acquisition of other companies.
**d.** More than one of the above.

**11. (LO 2)** XYZ, Inc. sells 100 shares of $5 par value treasury stock at $13 per share. If the cost of acquiring the shares was $10 per share, the entry for the sale should include credits to:

**a.** Treasury Stock $1,000 and Paid-in Capital from Treasury Stock $300.
**b.** Treasury Stock $500 and Paid-in Capital from Treasury Stock $800.
**c.** Treasury Stock $1,000 and Retained Earnings $300.
**d.** Treasury Stock $500 and Paid-in Capital in Excess of Par $800.

**12. (LO 2, 3)** In the stockholders' equity section, the cost of treasury stock is deducted from:

**a.** total paid-in capital and retained earnings.
**b.** retained earnings.
**c.** total stockholders' equity.
**d.** common stock in paid-in capital.

**13. (LO 3)** Which of the following is **not** reported under additional paid-in capital?

**a.** Paid-in capital in excess of par.
**b.** Common stock.
**c.** Paid-in capital in excess of stated value.
**d.** Paid-in capital from treasury stock.

**14. (LO 3)** In the stockholders' equity section of the balance sheet, common stock:

**a.** is listed before preferred stock.
**b.** is added to total capital stock.
**c.** is part of paid-in capital.
**d.** is part of additional paid-in capital.

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### Solutions

**1. c.** Government regulations are a disadvantage of a corporation. The other choices are advantages of a corporation.

**2. b.** Additional taxes are a disadvantage of a corporation. The other choices are advantages of a corporation.

**3. b.** Costs incurred in the formation of a corporation are expensed as incurred. The other choices are incorrect because costs incurred in the formation of a corporation (a) do include legal fees; (c) are recorded as an expense, not an asset; and (d) provide future benefits whose amounts and timing are difficult to determine. As a result, these costs are immediately expensed.

**4. d.** Legal capital per share applies to both par value stock and no-par value stock. Many states no longer require a par value and therefore use other means to determine legal capital. The other choices are true statements.

**5. a.** Total stockholders' equity = Total paid-in capital + Retained earnings. The other choices are incorrect because (b) capital stock and (d) common stock are included under paid-in capital. Choice (c) is incorrect because retained earnings is generally not subtracted in arriving at total stockholders' equity.

**6. b.** Retained Earnings is net income retained in the corporation. The other choices are incorrect because the Retained Earnings account (a) is earned capital, not paid-in capital; (c) is reported in the statement of retained earnings and on the balance sheet, but not on the income statement; and (d) is a permanent or real account and is never closed.

**7. c.** Cost is either the fair value of the consideration given up or the fair value of the consideration received, whichever is more clearly determinable. The most clearly determinable value in this noncash transaction is the fair value of the consideration given up of $9,000 ($9 per share × 1,000). The other choices are therefore incorrect.

**8. c.** Common Stock should be credited for $10,000 and Paid-in Capital in Excess of Par should be credited for $3,000. The stock is par value stock, not stated value stock, and this excess is contributed, not earned, capital. The other choices are therefore incorrect.

**9. d.** Preferred Stock should be credited for $1,000 and Paid-In Capital in Excess of Par—Preferred Stock should be credited for $200. The other choices are incorrect because (a) a total credit for the entire proceeds to Preferred Stock is incorrect because Preferred Stock has a total par value that is different than total proceeds; (b) this is contributed capital, not earned capital, so a credit to Retained Earnings is not correct; and (c) the account Paid-in Capital in Excess of Preferred Value is not an appropriate account title.

**10. d.** Corporations repurchase treasury stock to have additional shares available for use in acquisition, to reissue shares under bonus and stock compensation plans, and to signal to the stock market that management believes the stock is underpriced. Although the other choices are true statements, choice (d) is the better answer.

**11. a.** Treasury Stock should be credited for $1,000 (100 shares × $10, the acquisition price). Paid-in Capital from Treasury Stock should be credited for the difference between the $1,000 and the cash received of $1,300 (100 shares × $13), or $300. The other choices are therefore incorrect.

**12. a.** The cost of treasury stock is deducted from total paid-in capital and retained earnings. The other choices are therefore incorrect.

**13. b.** Common stock is reported in the capital stock section of paid-in capital, not in the additional paid-in capital section. The other choices are true statements.

**14. c.** Common stock is part of paid-in capital. The other choices are incorrect because common stock (a) is listed after preferred stock, (b) is not added to total capital stock but is part of capital stock, and (d) is part of capital stock, not additional paid-in capital.

## Practice Brief Exercises

**1. (LO 2)** On April 10, Leury Corporation issues 3,000 shares of $5 par value common stock for cash at $14 per share. Journalize the issuance of the stock.

*Prepare entries for issuance of par value common stock.*

### Solution

| | | | | |
|---|---|---|---|---|
| **1.** April 10 | Cash (3,000 × $14) | | 42,000 | |
| | Common Stock (3,000 × $5) | | | 15,000 |
| | Paid-in Capital in Excess of Par—Common Stock (3,000 × $9) | | | 27,000 |

**2. (LO 2)** On June 1, Omar Corporation purchases 600 shares of its $5 par value common stock for the treasury at a cash price of $10 per share. On August 15, it sells 400 shares of the treasury stock for cash at $13 per share. Journalize the two treasury stock transactions

*Prepare entries for treasury stock transactions.*

### Solution

| | | | | |
|---|---|---|---|---|
| **2.** June 1 | Treasury Stock (600 × $10) | | 6,000 | |
| | Cash | | | 6,000 |
| Aug. 15 | Cash (400 × $13) | | 5,200 | |
| | Treasury Stock (400 × $10) | | | 4,000 |
| | Paid-in Capital from Treasury Stock (400 × $3) | | | 1,200 |

**3. (LO 3)** **Financial Statement** Navarez Corporation has the following accounts at December 31: Common Stock, $2 par, 50,000 shares issued, $100,000; Paid-in Capital in Excess of Par—Common Stock $40,000; Retained Earnings $65,000; and Treasury Stock, 2,000 shares, $17,000. Prepare the stockholders' equity section of the balance sheet.

*Prepare stockholders' equity section.*

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### Solution

**3.** Stockholders' equity

| | |
|---|---|
| Paid-in capital | |
| Common stock, $2 par value, 50,000 shares issued, and 48,000 shares outstanding | $100,000 |
| In excess of par—common stock | 40,000 |
| Total paid-in capital | 140,000 |
| Retained earnings | 65,000 |
| Total paid-in capital and retained earnings | 205,000 |
| Less: Treasury stock (2,000 common shares) | 17,000 |
| Total stockholders' equity | $188,000 |

## Practice Exercises

*Journalize issuance of common and preferred stock and purchase of treasury stock.*

**1. (LO 2)** Bostick Co. had the following transactions during the current period.

Mar. 2 Issued 4,000 shares of $1 par value common stock to attorneys in payment of a bill for $35,000 for services performed in helping the company to incorporate.
June 12 Issued 50,000 shares of $1 par value common stock for cash of $360,000.
July 11 Issued 2,000 shares of $100 par value preferred stock for cash at $120 per share.
Nov. 28 Purchased 2,000 shares of treasury stock for $70,000.

### Instructions

Journalize the transactions.

### Solution

| | | | | |
|---|---|---|---|---|
| **1.** Mar. 2 | Organization Expense | | 35,000 | |
| | Common Stock (4,000 × $1) | | | 4,000 |
| | Paid-in Capital in Excess of Par—Common Stock | | | 31,000 |
| June 12 | Cash | | 360,000 | |
| | Common Stock (50,000 × $1) | | | 50,000 |
| | Paid-in Capital in Excess of Par—Common Stock | | | 310,000 |
| July 11 | Cash (2,000 × $120) | | 240,000 | |
| | Preferred Stock (2,000 × $100) | | | 200,000 |
| | Paid-in Capital in Excess of Par—Preferred Stock (2,000 × $20) | | | 40,000 |
| Nov. 28 | Treasury Stock | | 70,000 | |
| | Cash | | | 70,000 |

*Journalize treasury stock transactions.*

**2. (LO 2)** Star Corporation purchased from its stockholders 5,000 shares of its own previously issued stock for $250,000. It later resold 2,000 shares for $53 per share, then 2,000 more shares for $48 per share, and finally 1,000 shares for $43 per share.

### Instructions

Prepare journal entries for the purchase of the treasury stock and the three sales of treasury stock.

### Solution

| | | | |
|---|---|---|---|
| **2.** Treasury Stock | | 250,000 | |
| Cash | | | 250,000 |
| Cash (2,000 × $53) | | 106,000 | |
| Treasury Stock (2,000 × $50) | | | 100,000 |
| Paid-in Capital from Treasury Stock | | | 6,000 |
| Cash (2,000 × $48) | | 96,000 | |
| Paid-in Capital from Treasury Stock | | 4,000 | |
| Treasury Stock (2,000 × $50) | | | 100,000 |

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| | | |
|---|---|---|
| Cash (1,000 × $43) | 43,000 | |
| Paid-in Capital from Treasury Stock ($6,000 – $4,000) | 2,000 | |
| Retained Earnings | 5,000 | |
| Treasury Stock (1,000 × $50) | | 50,000 |

## Practice Problem

**(LO 2, 3)** **Financial Statement** Rolman Corporation is authorized to issue 1,000,000 shares of $5 par value common stock. In its first year, the company has the following stock transactions.

*Journalize transactions and prepare stockholders' equity section.*

Jan. 10 Issued 400,000 shares of stock at $8 per share.
July 1 Issued 100,000 shares of stock for land. The land had an asking price of $900,000. The stock is currently selling on a national exchange at $8.25 per share.
Sept. 1 Purchased 10,000 shares of common stock for the treasury at $9 per share.
Dec. 1 Sold 4,000 shares of the treasury stock at $10 per share.

### Instructions

**a.** Journalize the transactions.

**b.** Prepare the stockholders' equity section assuming the company had retained earnings of $200,000 at December 31 and an accumulated other comprehensive income of $105,000.

### Solution

**a.**

| | | | | |
|---|---|---|---|---|
| Jan. 10 | Cash | | 3,200,000 | |
| | Common Stock | | | 2,000,000 |
| | Paid-in Capital in Excess of Par—Common Stock | | | 1,200,000 |
| | (To record issuance of 400,000 shares of $5 par value stock) | | | |
| July 1 | Land | | 825,000 | |
| | Common Stock | | | 500,000 |
| | Paid-in Capital in Excess of Par—Common Stock | | | 325,000 |
| | (To record issuance of 100,000 shares of $5 par value stock for land) | | | |
| Sept. 1 | Treasury Stock | | 90,000 | |
| | Cash | | | 90,000 |
| | (To record purchase of 10,000 shares of treasury stock at cost) | | | |
| Dec. 1 | Cash | | 40,000 | |
| | Treasury Stock | | | 36,000 |
| | Paid-in Capital from Treasury Stock | | | 4,000 |
| | (To record sale of 4,000 shares of treasury stock above cost) | | | |

**b.**

**Rolman Corporation**
**Balance Sheet (partial)**

| | | |
|---|---|---|
| Stockholders' equity | | |
| Paid-in capital | | |
| Capital stock | | |
| Common stock, $5 par value, 1,000,000 shares authorized, 500,000 shares issued, 494,000 shares outstanding | | $2,500,000 |
| Additional paid-in capital | | |
| In excess of par—common stock | $1,525,000 | |
| From treasury stock | 4,000 | |
| Total additional paid-in capital | | 1,529,000 |
| Total paid-in capital | | 4,029,000 |
| Retained earnings | | 200,000 |
| Total paid-in capital and retained earnings | | 4,229,000 |
| Accumulated other comprehensive income | | 105,000 |
| Less: Treasury stock (6,000 shares) | | 54,000 |
| Total stockholders' equity | | $4,280,000 |

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## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

## Questions

**1.** Mark Kemp, a student, asks your help in understanding the following characteristics of a corporation: (a) separate legal existence, (b) limited liability of stockholders, and (c) transferable ownership rights. Explain these characteristics to Mark.

**2. a.** Your friend Katie Fehr cannot understand how the characteristic of corporation management is both an advantage and a disadvantage. Clarify this problem for Katie.

**b.** Identify and explain two other disadvantages of a corporation.

**3. a.** The following terms pertain to the forming of a corporation: (1) charter, (2) by-laws, and (3) organization costs. Explain the terms.

**b.** Donna Fleming believes a corporation must be incorporated in the state in which its headquarters' office is located. Is Donna correct? Explain.

**4.** What are the basic ownership rights of common stockholders in the absence of restrictive provisions?

**5. a.** What are the two principal components of stockholders' equity?

**b.** What is paid-in capital? Give three examples.

**6.** How does the balance sheet for a corporation differ from the balance sheet for a proprietorship?

**7.** The corporate charter of Luney Corporation allows the issuance of a maximum of 100,000 shares of common stock. During its first two years of operations, Luney sold 70,000 shares to shareholders and reacquired 7,000 of these shares. After these transactions, how many shares are authorized, issued, and outstanding?

**8.** Which is the better investment—common stock with a par value of $5 per share, or common stock with a par value of $20 per share? Why?

**9.** What factors help determine the market price of stock?

**10.** What effect does the issuance of stock at a price above par value have on the issuer's net income? Explain.

**11.** Why is common stock usually not issued at a price that is less than par value?

**12.** Land appraised at $80,000 is purchased by issuing 1,000 shares of $20 par value common stock. The market price of the shares at the time of the exchange, based on active trading in the securities market, is $95 per share. Should the land be recorded at $20,000, $80,000, or $95,000? Explain.

**13.** For what reasons might a company like **IBM** repurchase some of its stock (treasury stock)?

**14.** Meng, Inc. purchases 1,000 shares of its own previously issued $5 par common stock for $12,000. Assuming the shares are held in the treasury, what effect does this transaction have on (a) net income, (b) total assets, (c) total paid-in capital, and (d) total stockholders' equity?

**15.** The treasury stock purchased in Question 14 is resold by Meng, Inc. for $16,000. What effect does this transaction have on (a) net income, (b) total assets, (c) total paid-in capital, and (d) total stockholders' equity?

**16.** Diaz Inc.'s common stock has a par value of $1 and a current market price of $15. Explain why these amounts are different.

**17.** Indicate how each of the following accounts should be classified in the stockholders' equity section.

**a.** Common stock.

**b.** Paid-in capital in excess of par—common stock.

**c.** Retained earnings.

**d.** Treasury stock.

**e.** Paid-in capital from treasury stock.

**f.** Paid-in capital in excess of stated value—common stock.

**g.** Preferred stock.

**h.** Accumulated other comprehensive income.

**18.** How many shares of common stock did **Apple** have outstanding at September 26, 2015, and at September 27, 2014?

## Brief Exercises

*List the advantages and disadvantages of a corporation.*

**BE13.1 (LO 1)** Angie Baden is studying for her accounting midterm examination. Identify for Angie the advantages and disadvantages of the corporate form of business organization.

*Prepare closing entries.*

**BE13.2 (LO 1)** At December 31, Ortiz Corporation reports net income of $480,000. Prepare the entry to close net income.

*Prepare entries for issuance of par value common stock.*

**BE13.3 (LO 2)** On May 10, Jack Corporation issues 2,000 shares of $10 par value common stock for cash at $18 per share. Journalize the issuance of the stock.

*Prepare entries for issuance of no-par value common stock.*

**BE13.4 (LO 2)** On June 1, Noonan Inc. issues 4,000 shares of no-par common stock at a cash price of $6 per share. Journalize the issuance of the shares assuming the stock has a stated value of $1 per share.

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**BE13.5 (LO 2)** Lei Inc.'s $10 par value common stock is actively traded at a market price of $15 per share. Lei issues 5,000 shares to purchase land advertised for sale at $85,000. Journalize the issuance of the stock in acquiring the land.

*Prepare entries for issuance of stock in a noncash transaction.*

**BE13.6 (LO 2)** Garb Inc. issues 5,000 shares of $100 par value preferred stock for cash at $130 per share. Journalize the issuance of the preferred stock.

*Prepare entries for issuance of preferred stock.*

**BE13.7 (LO 2)** On July 1, Raney Corporation purchases 500 shares of its $5 par value common stock for the treasury at a cash price of $9 per share. On September 1, it sells 300 shares of the treasury stock for cash at $11 per share. Journalize the two treasury stock transactions.

*Prepare entries for treasury stock transactions.*

**BE13.8 (LO 3)** **Financial Statement** Pine Corporation has the following accounts at December 31: Common Stock, $10 par, 5,000 shares issued, $50,000; Paid-in Capital in Excess of Par—Common Stock $30,000; Retained Earnings $45,000; and Treasury Stock, 500 shares, $11,000. Prepare the stockholders' equity section of the balance sheet.

*Prepare stockholders' equity section.*

## DO IT! Exercises

**DO IT! 13.1a (LO 1)** Indicate whether each of the following statements is true or false. If false, indicate how to correct the statements.

*Analyze statements about corporate organization.*

_____ **1.** The corporation is an entity separate and distinct from its owners.

_____ **2.** The liability of stockholders is normally limited to their investment in the corporation.

_____ **3.** The relative lack of government regulation is an advantage of the corporate form of business.

_____ **4.** There is no journal entry to record the authorization of capital stock.

_____ **5.** No-par value stock is quite rare today.

**DO IT! 13.1b (LO 1)** **Financial Statement** At the end of its first year of operation, Goss Corporation has $1,000,000 of common stock and net income of $236,000. Prepare (a) the closing entry for net income and (b) the stockholders' equity section at year-end.

*Close net income and prepare stockholders' equity section.*

**DO IT! 13.2a (LO 2)** Beauty Island Corporation began operations on April 1 by issuing 60,000 shares of $5 par value common stock for cash at $13 per share. On April 19, it issued 2,000 shares of common stock to attorneys in settlement of their bill of $27,500 for organization costs. In addition, Beauty Island issued 1,000 shares of $1 par value preferred stock for $6 cash per share. Journalize the issuance of the common and preferred shares, assuming the shares are not publicly traded.

*Journalize issuance of stock.*

**DO IT! 13.2b (LO 2)** Fouts Corporation purchased 2,000 shares of its $10 par value common stock for $130,000 on August 1. It will hold these shares in the treasury until resold. On December 1, the corporation sold 1,200 shares of treasury stock for cash at $72 per share. Journalize the treasury stock transactions.

*Journalize treasury stock transactions.*

**DO IT! 13.3 (LO 3)** **Financial Statement** Hoyle Corporation has issued 100,000 shares of $5 par value common stock. It authorized 500,000 shares. The paid-in capital in excess of par on the common stock is $263,000. The corporation has reacquired 7,000 shares at a cost of $46,000 and is currently holding those shares. It also had accumulated other comprehensive income of $67,000.

The corporation also has 2,000 shares issued and outstanding of 9%, $100 par value preferred stock. It authorized 10,000 shares. The paid-in capital in excess of par on the preferred stock is $23,000. Retained earnings is $372,000.

Prepare the stockholders' equity section of the balance sheet.

*Prepare stockholders' equity section.*

## Exercises

**E13.1 (LO 1)** Andrea has prepared the following list of statements about corporations.

*Identify characteristics of a corporation.*

1. A corporation is an entity separate and distinct from its owners.
2. As a legal entity, a corporation has most of the rights and privileges of a person.
3. Most of the largest U.S. corporations are privately held corporations.
4. Corporations may buy, own, and sell property; borrow money; enter into legally binding contracts; and sue and be sued.

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5. The net income of a corporation is not taxed as a separate entity.
6. Creditors have a legal claim on the personal assets of the owners of a corporation if the corporation does not pay its debts.
7. The transfer of stock from one owner to another requires the approval of either the corporation or other stockholders.
8. The board of directors of a corporation legally owns the corporation.
9. The chief accounting officer of a corporation is the controller.
10. Corporations are subject to fewer state and federal regulations than partnerships or proprietorships.

**Instructions**

Identify each statement as true or false. If false, indicate how to correct the statement.

*Identify characteristics of a corporation.*

**E13.2 (LO 1)** Andrea (see E13.1) has studied the information you gave her in that exercise and has come to you with more statements about corporations.

1. Corporation management is both an advantage and a disadvantage of a corporation compared to a proprietorship or a partnership.
2. Limited liability of stockholders, government regulations, and additional taxes are the major disadvantages of a corporation.
3. When a corporation is formed, organization costs are recorded as an asset.
4. Each share of common stock gives the stockholder the ownership rights to vote at stockholder meetings, share in corporate earnings, keep the same percentage ownership when new shares of stock are issued, and share in assets upon liquidation.
5. The number of issued shares is always greater than or equal to the number of authorized shares.
6. A journal entry is required for the authorization of capital stock.
7. Publicly held corporations usually issue stock directly to investors.
8. The trading of capital stock on a securities exchange involves the transfer of already issued shares from an existing stockholder to another investor.
9. The market price of common stock is usually the same as its par value.
10. Retained earnings is the total amount of cash and other assets paid in to the corporation by stockholders in exchange for capital stock.

**Instructions**

Identify each statement as true or false. If false, indicate how to correct the statement.

*Journalize issuance of common stock.*

**E13.3 (LO 2)** During its first year of operations, Foyle Corporation had the following transactions pertaining to its common stock.

Jan. 10 Issued 70,000 shares for cash at $5 per share.
July 1 Issued 40,000 shares for cash at $7 per share.

**Instructions**

**a.** Journalize the transactions, assuming that the common stock has a par value of $5 per share.
**b.** Journalize the transactions, assuming that the common stock is no-par with a stated value of $1 per share.

*Journalize issuance of common stock.*

**E13.4 (LO 2)** Osage Corporation issued 2,000 shares of stock.

**Instructions**

Prepare the entry for the issuance under the following assumptions.

**a.** The stock had a par value of $5 per share and was issued for a total of $52,000.
**b.** The stock had a stated value of $5 per share and was issued for a total of $52,000.
**c.** The stock had no par or stated value and was issued for a total of $52,000.
**d.** The stock had a par value of $5 per share and was issued to attorneys for services during incorporation valued at $52,000.
**e.** The stock had a par value of $5 per share and was issued for land worth $52,000.

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**E13.5** **(LO 2)** Quay Co. had the following transactions during the current period.

*Journalize issuance of common and preferred stock and purchase of treasury stock.*

| | | |
|---|---|---|
| Mar. | 2 | Issued 5,000 shares of $5 par value common stock to attorneys in payment of a bill for $30,000 for services performed in helping the company to incorporate. |
| June | 12 | Issued 60,000 shares of $5 par value common stock for cash of $375,000. |
| July | 11 | Issued 1,000 shares of $100 par value preferred stock for cash at $110 per share. |
| Nov. | 28 | Purchased 2,000 shares of treasury stock for $80,000. |

### Instructions

Journalize the transactions.

**E13.6** **(LO 2)** As an auditor for the CPA firm of Hinkson and Calvert, you encounter the following situations in auditing different clients.

*Journalize noncash common stock transactions.*

1. LR Corporation is a closely held corporation whose stock is not publicly traded. On December 5, the corporation acquired land by issuing 5,000 shares of its $20 par value common stock. The owners' asking price for the land was $120,000, and the fair value of the land was $110,000.
2. Vera Corporation is a publicly held corporation whose common stock is traded on the securities markets. On June 1, it acquired land by issuing 20,000 shares of its $10 par value stock. At the time of the exchange, the land was advertised for sale at $250,000. The stock was selling at $11 per share.

### Instructions

Prepare the journal entries for each of the situations above.

**E13.7** **(LO 2)** On January 1, 2020, the stockholders' equity section of Newlin Corporation shows common stock ($5 par value) $1,500,000; paid-in capital in excess of par $1,000,000; and retained earnings $1,200,000. During the year, the following treasury stock transactions occurred.

*Journalize treasury stock transactions.*

| | | |
|---|---|---|
| Mar. | 1 | Purchased 50,000 shares for cash at $15 per share. |
| July | 1 | Sold 10,000 treasury shares for cash at $17 per share. |
| Sept. | 1 | Sold 8,000 treasury shares for cash at $14 per share. |

### Instructions

**a.** Journalize the treasury stock transactions.

**b.** Restate the entry for September 1, assuming the treasury shares were sold at $12 per share.

**E13.8** **(LO 2)** Rinehart Corporation purchased from its stockholders 5,000 shares of its own previously issued stock for $255,000. It later resold 2,000 shares for $54 per share, then 2,000 more shares for $49 per share, and finally 1,000 shares for $43 per share.

*Journalize treasury stock transactions.*

### Instructions

Prepare journal entries for the purchase of the treasury stock and the three sales of treasury stock.

**E13.9** **(LO 2, 3)** **Financial Statement** Tran Corporation is authorized to issue both preferred and common stock. The par value of the preferred is $50. During the first year of operations, the company had the following events and transactions pertaining to its preferred stock.

*Journalize preferred stock transactions and indicate statement presentation.*

| | | |
|---|---|---|
| Feb. | 1 | Issued 20,000 shares for cash at $53 per share. |
| July | 1 | Issued 12,000 shares for cash at $57 per share. |

### Instructions

**a.** Journalize the transactions.

**b.** Post to the stockholders' equity accounts.

**c.** Indicate the financial statement presentation of the related accounts.

**E13.10** **(LO 2)** Gilliam Corporation recently hired a new accountant with extensive experience in accounting for partnerships. Because of the pressure of the new job, the accountant was unable to review his textbooks on the topic of corporation accounting. During the first month, the accountant made the following entries for the corporation's capital stock.

*Prepare correct entries for capital stock transactions.*

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| | | | | |
|---|---|---|---|---|
| May | 2 | Cash | 130,000 | |
| | | Capital Stock | | 130,000 |
| | | (Issued 10,000 shares of $10 par value common stock at $13 per share) | | |
| | 10 | Cash | 600,000 | |
| | | Capital Stock | | 600,000 |
| | | (Issued 10,000 shares of $50 par value preferred stock at $60 per share) | | |
| | 15 | Capital Stock | 15,000 | |
| | | Cash | | 15,000 |
| | | (Purchased 1,000 shares of common stock for the treasury at $15 per share) | | |
| | 31 | Cash | 8,000 | |
| | | Capital Stock | | 5,000 |
| | | Gain on Sale of Stock | | 3,000 |
| | | (Sold 500 shares of treasury stock at $16 per share) | | |

### Instructions

On the basis of the explanation for each entry, prepare the entry that should have been made for the capital stock transactions.

*Prepare a stockholders' equity section.*

**E13.11 (LO 3)** **Financial Statement** The following stockholders' equity accounts, arranged alphabetically, are in the ledger of Eudaley Corporation at December 31, 2020.

| | |
|---|---|
| Common Stock ($5 stated value) | $1,500,000 |
| Paid-in Capital in Excess of Par—Preferred Stock | 280,000 |
| Paid-in Capital in Excess of Stated Value—Common Stock | 900,000 |
| Preferred Stock (8%, $100 par) | 500,000 |
| Retained Earnings | 1,234,000 |
| Treasury Stock (10,000 common shares) | 120,000 |

### Instructions

Prepare the stockholders' equity section of the balance sheet at December 31, 2020.

*Answer questions about stockholders' equity section.*

**E13.12 (LO 2, 3)** **Financial Statement** **Writing** The stockholders' equity section of Haley Corporation at December 31 is as follows.

**Haley Corporation**
**Balance Sheet (partial)**

| | |
|---|---|
| Paid-in capital | |
| Preferred stock, 10,000 shares authorized, 6,000 shares issued and outstanding | $ 300,000 |
| Common stock, no par, 750,000 shares authorized, 600,000 shares issued | 1,200,000 |
| Total paid-in capital | 1,500,000 |
| Retained earnings | 1,858,000 |
| Total paid-in capital and retained earnings | 3,358,000 |
| Less: Treasury stock (10,000 common shares) | 64,000 |
| Total stockholders' equity | $3,294,000 |

### Instructions

From a review of the stockholders' equity section, as chief accountant, write a memo to the president of the company answering the following questions.

**a.** How many shares of common stock are outstanding?

**b.** Assuming there is a stated value, what is the stated value of the common stock?

**c.** What is the par value of the preferred stock?

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**E13.13 (LO 3)** **Financial Statement** The stockholders' equity section of **Aluminum Company of America (Alcoa)** showed the following (in alphabetical order): additional paid-in capital $6,101, common stock $925, preferred stock $56, retained earnings $7,428, and treasury stock 2,828. All dollar data are in millions.

*Prepare a stockholders' equity section.*

The preferred stock has 557,740 shares authorized, with a par value of $100. At December 31 of the current year, 557,649 shares of preferred are issued and 546,024 shares are outstanding. There are 1.8 billion shares of $1 par value common stock authorized, of which 924.6 million are issued and 844.8 million are outstanding at December 31.

**Instructions**

Prepare the stockholders' equity section of the current year, including disclosure of all relevant data.

**E13.14 (LO 3)** The ledger of Rolling Hills Corporation contains the following accounts: Common Stock, Preferred Stock, Treasury Stock, Paid-in Capital in Excess of Par—Preferred Stock, Paid-in Capital in Excess of Stated Value—Common Stock, Paid-in Capital from Treasury Stock, and Retained Earnings.

*Classify stockholders' equity accounts.*

**Instructions**

Classify each account using the following table headings.

| | Paid-in Capital | | | |
|---|---|---|---|---|
| Account | Capital Stock | Additional | Retained Earnings | Other |

**E13.15 (LO 3)** **Financial Statement** The following accounts appear in the ledger of Horner Inc. after the books are closed at December 31, 2020.

*Prepare a stockholder's equity section.*

| | |
|---|---|
| Common Stock, no par, $1 stated value, 400,000 shares authorized; 300,000 shares issued | $ 300,000 |
| Paid-in Capital in Excess of Stated Value—Common Stock | 1,230,000 |
| Preferred Stock, $5 par value, 8%, 40,000 shares authorized; 30,000 shares issued | 150,000 |
| Retained Earnings | 800,000 |
| Treasury Stock (10,000 common shares) | 74,000 |
| Paid-in Capital in Excess of Par—Preferred Stock | 344,000 |
| Accumulated Other Comprehensive Loss | 31,000 |

**Instructions**

Prepare the stockholders' equity section at December 31, 2020.

## Problems: Set A

**P13.1A (LO 2, 3)** **Financial Statement** DeLong Corporation was organized on January 1, 2020. It is authorized to issue 10,000 shares of 8%, $100 par value preferred stock, and 500,000 shares of no-par common stock with a stated value of $2 per share. The following stock transactions were completed during the first year.

*Journalize stock transactions, post, and prepare paid-in capital section.*

GLS

| | | |
|---|---|---|
| Jan. | 10 | Issued 80,000 shares of common stock for cash at $4 per share. |
| Mar. | 1 | Issued 5,000 shares of preferred stock for cash at $105 per share. |
| Apr. | 1 | Issued 24,000 shares of common stock for land. The asking price of the land was $90,000. The fair value of the land was $85,000. |
| May | 1 | Issued 80,000 shares of common stock for cash at $4.50 per share. |
| Aug. | 1 | Issued 10,000 shares of common stock to attorneys in payment of their bill of $30,000 for services performed in helping the company organize. |
| Sept. | 1 | Issued 10,000 shares of common stock for cash at $5 per share. |
| Nov. | 1 | Issued 1,000 shares of preferred stock for cash at $109 per share. |

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**Instructions**

**a.** Journalize the transactions.

**b.** Post to the stockholders' equity accounts. (Use T-accounts.)

**c.** Prepare the paid-in capital section of stockholders' equity at December 31, 2020.

c. Total paid-in capital $1,479,000

*Journalize and post treasury stock transactions, and prepare stockholders' equity section.*

**P13.2A (LO 2, 3) Financial Statement** Fechter Corporation had the following stockholders' equity accounts on January 1, 2020: Common Stock ($5 par) $500,000, Paid-in Capital in Excess of Par—Common Stock $200,000, and Retained Earnings $100,000. In 2020, the company had the following treasury stock transactions.

| | |
|---|---|
| Mar. 1 | Purchased 5,000 shares at $8 per share. |
| June 1 | Sold 1,000 shares at $12 per share. |
| Sept. 1 | Sold 2,000 shares at $10 per share. |
| Dec. 1 | Sold 1,000 shares at $7 per share. |

Fechter Corporation uses the cost method of accounting for treasury stock. In 2020, the company reported net income of $30,000.

**Instructions**

**a.** Journalize the treasury stock transactions, and prepare the closing entry at December 31, 2020, for net income.

b. Treasury Stock $8,000

**b.** Open accounts for (1) Paid-in Capital from Treasury Stock, (2) Treasury Stock, and (3) Retained Earnings. (Post to T-accounts.)

c. Total stockholders' equity $829,000

**c.** Prepare the stockholders' equity section for Fechter Corporation at December 31, 2020.

*Journalize and post transactions, and prepare stockholders' equity section.*

**P13.3A (LO 1, 2, 3) Financial Statement** The stockholders' equity accounts of Castle Corporation on January 1, 2020, were as follows.

GLS

| | |
|---|---|
| Preferred Stock (8%, $50 par, 10,000 shares authorized) | $ 400,000 |
| Common Stock ($1 stated value, 2,000,000 shares authorized) | 1,000,000 |
| Paid-in Capital in Excess of Par—Preferred Stock | 100,000 |
| Paid-in Capital in Excess of Stated Value—Common Stock | 1,450,000 |
| Retained Earnings | 1,816,000 |
| Treasury Stock (10,000 common shares) | 50,000 |

During 2020, the corporation had the following transactions and events pertaining to its stockholders' equity.

| | |
|---|---|
| Feb. 1 | Issued 25,000 shares of common stock for $120,000. |
| Apr. 14 | Sold 6,000 shares of treasury stock—common for $33,000. |
| Sept. 3 | Issued 5,000 shares of common stock for a patent valued at $35,000. |
| Nov. 10 | Purchased 1,000 shares of common stock for the treasury at a cost of $6,000. |
| Dec. 31 | Determined that net income for the year was $452,000. |

No dividends were declared during the year.

**Instructions**

**a.** Journalize the transactions and the closing entry for net income.

**b.** Enter the beginning balances in the accounts, and post the journal entries to the stockholders' equity accounts. (Use J5 for the posting reference.)

c. Total stockholders' equity $5,350,000

**c.** Prepare a stockholders' equity section at December 31, 2020.

*Journalize and post stock transactions, and prepare stockholders' equity section.*

**P13.4A (LO 1, 2, 3) Financial Statement** Peck Corporation is authorized to issue 20,000 shares of $50 par value, 10% preferred stock and 125,000 shares of $5 par value common stock. On January 1, 2020, the ledger contained the following stockholders' equity balances.

GLS

| | |
|---|---|
| Preferred Stock (10,000 shares) | $500,000 |
| Paid-in Capital in Excess of Par—Preferred Stock | 75,000 |
| Common Stock (70,000 shares) | 350,000 |
| Paid-in Capital in Excess of Par—Common Stock | 700,000 |
| Retained Earnings | 300,000 |

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During 2020, the following transactions occurred.

| | | |
|---|---|---|
| Feb. | 1 | Issued 2,000 shares of preferred stock for land having a fair value of $120,000. |
| Mar. | 1 | Issued 1,000 shares of preferred stock for cash at $65 per share. |
| July | 1 | Issued 16,000 shares of common stock for cash at $7 per share. |
| Sept. | 1 | Issued 400 shares of preferred stock for a patent. The asking price of the patent was $30,000. Market price for the preferred stock was $70 and the fair value for the patent was indeterminable. |
| Dec. | 1 | Issued 8,000 shares of common stock for cash at $7.50 per share. |
| Dec. | 31 | Net income for the year was $260,000. No dividends were declared. |

### Instructions

**a.** Journalize the transactions and the closing entry for net income.

**b.** Enter the beginning balances in the accounts, and post the journal entries to the stockholders' equity accounts. (Use T-accounts.)

**c.** Prepare a stockholders' equity section at December 31, 2020.

c. Total stockholders' equity $2,570,000

**P13.5A (LO 3)** **Financial Statement** The following stockholders' equity accounts arranged alphabetically are in the ledger of Galindo Corporation at December 31, 2020.

*Prepare stockholders' equity section.*

Excel

| | |
|---|---|
| Common Stock ($5 stated value) | $2,000,000 |
| Paid-in Capital from Treasury Stock | 10,000 |
| Paid-in Capital in Excess of Par—Preferred Stock | 679,000 |
| Paid-in Capital in Excess of Stated Value—Common Stock | 1,600,000 |
| Preferred Stock (8%, $50 par) | 800,000 |
| Retained Earnings | 1,748,000 |
| Treasury Stock (10,000 common shares) | 130,000 |

### Instructions

Prepare a stockholders' equity section at December 31, 2020.

Total stockholders' equity $6,707,000

**P13.6A (LO 2, 3)** **Financial Statement** Irwin Corporation has been authorized to issue 20,000 shares of $100 par value, 10%, preferred stock and 1,000,000 shares of no-par common stock. The corporation assigned a $2.50 stated value to the common stock. At December 31, 2020, the ledger contained the following balances pertaining to stockholders' equity.

*Prepare entries for stock transactions and prepare stockholders' equity section.*

| | |
|---|---|
| Preferred Stock | $ 120,000 |
| Paid-in Capital in Excess of Par—Preferred Stock | 20,000 |
| Common Stock | 1,000,000 |
| Paid-in Capital in Excess of Stated Value—Common Stock | 1,800,000 |
| Treasury Stock (1,000 common shares) | 11,000 |
| Paid-in Capital from Treasury Stock | 1,500 |
| Retained Earnings | 82,000 |
| Accumulated Other Comprehensive Income | 51,000 |

The preferred stock was issued for land having a fair value of $140,000. All common stock issued was for cash. In November, 1,500 shares of common stock were purchased for the treasury at a per share cost of $11. In December, 500 shares of treasury stock were sold for $14 per share. No dividends were declared in 2020.

### Instructions

**a.** Prepare the journal entries for the:

**1.** Issuance of preferred stock for land.

**2.** Issuance of common stock for cash.

**3.** Purchase of common treasury stock for cash.

**4.** Sale of treasury stock for cash.

**b.** Prepare the stockholders' equity section at December 31, 2020.

b. Total stockholders' equity $3,063,500

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## Continuing Case

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### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 12.)

**CC13** Natalie's friend, Curtis Lesperance, decides to meet with Natalie after hearing that her discussions about a possible business partnership with her friend Katy Peterson have failed. Because Natalie has been so successful with Cookie Creations and Curtis has been just as successful with his coffee shop, they both conclude that they could benefit from each other's business expertise. Curtis and Natalie next evaluate the different types of business organization. Because of the advantage of limited personal liability, they decide to form a corporation. Natalie and Curtis are very excited about this new business venture. They come to you with information about their businesses and with a number of questions.

*Go to* **WileyPLUS** *for complete case details and instructions.*

## Ethics Case

**EC13** The R&D division of Piqua Chemical Corp. has just developed a chemical for sterilizing the vicious Brazilian "killer bees" which are invading Mexico and the southern United States. The president of the company is anxious to get the chemical on the market to boost the company's profits. He believes his job is in jeopardy because of decreasing sales and profits. The company has an opportunity to sell this chemical in Central American countries, where the laws are much more relaxed than in the United States.

The director of Piqua's R&D division strongly recommends further testing in the laboratory for side-effects of this chemical on other insects, birds, animals, plants, and even humans. He cautions the president, "We could be sued from all sides if the chemical has tragic side-effects that we didn't even test for in the labs." The president answers, "We can't wait an additional year for your lab tests. We can avoid losses from such lawsuits by establishing a separate wholly owned corporation to shield Piqua Corp. from such lawsuits. We can't lose any more than our investment in the new corporation, and we'll invest in just the patent covering this chemical. We'll reap the benefits if the chemical works and is safe, and avoid the losses from lawsuits if it's a disaster." The following week, Piqua creates a new wholly owned corporation called Finlay Inc., sells the chemical patent to it for $10, and watches the spraying begin.

### Instructions

**a.** Who are the stakeholders in this situation?

**b.** Are the president's motives and actions ethical?

**c.** Can Piqua shield itself against losses of Finlay Inc.?

## Comprehensive Accounting Cycle Review

*Journalize transactions and prepare financial statements.*

**ACR13** Karen Noonan opened Clean Sweep Inc. on February 1, 2020. During February, the following transactions were completed.

| | | |
|---|---|---|
| Feb. | 1 | Issued 5,000 shares of Clean Sweep common stock for $13,000. Each share has a $1.50 par. |
| | 1 | Borrowed $8,000 on a 2-year, 6% note payable. |
| | 1 | Paid $9,020 to purchase used floor and window cleaning equipment from a company going out of business ($4,820 was for the floor equipment and $4,200 for the window equipment). |
| | 1 | Paid $220 for February Internet and phone services. |
| | 3 | Purchased cleaning supplies for $980 on account. |
| | 4 | Hired 4 employees. Each will be paid $480 per 5-day work week (Monday–Friday). Employees will begin working Monday, February 9. |

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Feb. 5 Obtained insurance coverage for $9,840 per year. Coverage runs from February 1, 2020, through January 31, 2021. Karen paid $2,460 cash for the first quarter of coverage.
5 Discussions with the insurance agent indicated that providing outside window cleaning services would cost too much to insure. Karen sold the window cleaning equipment for $3,950 cash.
16 Billed customers $3,900 for cleaning services performed through February 13, 2020.
17 Received $540 from a customer for 4 weeks of cleaning services to begin February 21, 2020. (By paying in advance, this customer received 10% off the normal weekly fee of $150.)
18 Paid $300 on amount owed on cleaning supplies.
20 Paid $3 per share to buy 300 shares of Clean Sweep common stock from a shareholder who disagreed with management goals. The shares will be held as treasury shares.
23 Billed customers $4,300 for cleaning services performed through February 20.
24 Paid cash for employees' wages for 2 weeks (February 9–13 and 16–20).
25 Collected $2,500 cash from customers billed on February 16.
27 Paid $220 for Internet and phone services for March.

### Instructions

**a.** Journalize the February transactions. (You do not need to include an explanation for each journal entry.)

**b.** Post to the ledger accounts (Use T-accounts.)

**c.** Prepare a trial balance at February 28, 2020.

c. Totals $30,420

**d.** Journalize the following adjustments. (Round all amounts to whole dollars.)

**1.** Services performed for customers through February 27, 2020, but unbilled and uncollected were $3,800.

**2.** Received notice that a customer who was billed $200 for services performed February 10 has filed for bankruptcy. Clean Sweep does not expect to collect any portion of this outstanding receivable.

**3.** Clean Sweep uses the allowance method to estimate bad debts. Clean Sweep estimates that 3% of its month-end receivables will not be collected.

**4.** Record 1 month of depreciation for the floor equipment. Use the straight-line method, an estimated life of 4 years, and $500 salvage value.

**5.** Record 1 month of insurance expense.

**6.** An inventory count shows $400 of supplies on hand at February 28.

**7.** One week of services were performed for the customer who paid in advance on February 17.

**8.** Accrue for wages owed through February 28, 2020.

**9.** Accrue for interest expense for 1 month.

**10.** Karen estimates a 20% income tax rate. (*Hint:* Prepare an income statement up to income before income taxes to help with the income tax calculation.)

**e.** Post adjusting entries to the T-accounts.

**f.** Prepare an adjusted trial balance.

**g.** Prepare a **multiple-step income statement, a retained earnings statement,** and a **properly classified balance sheet** as of February 28, 2020.

g. Net income $3,117
Tot. assets $26,101

**h.** Journalize closing entries.

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT13.1** The stockholders' equity section for **Apple Inc.** is shown in Appendix A. The complete annual report, including the notes to the financial statements, is available at the company's website.

### Instructions

**a.** What is the par or stated value per share of Apple's common stock?

**b.** What percentage of Apple's authorized common stock was issued at September 26, 2015?

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## Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT13.2** **PepsiCo, Inc.**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

### Instructions

**a.** What percentage of authorized shares was issued by Coca-Cola at December 31, 2015, and by PepsiCo at December 26, 2015?

**b.** How many shares are held as treasury stock by Coca-Cola at December 31, 2015, and by PepsiCo at December 26, 2015?

**c.** How many Coca-Cola common shares are outstanding at December 31, 2015? How many PepsiCo shares of common stock are outstanding at December 26, 2015?

## Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT13.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website. Wal-Mart has 11,000 million shares authorized.

### Instructions

**a.** What percentage of authorized shares was issued by Amazon at December 31, 2015, and by Wal-Mart at January 31, 2016?

**b.** How many shares are held as treasury stock by Amazon at December 31, 2015, and by Wal-Mart at January 31, 2016?

**c.** How many Amazon common shares are outstanding at December 31, 2015? How many Wal-Mart shares of common stock are outstanding at January 31, 2016?

## Real-World Focus

**CT13.4** Use the stockholders' equity section of an annual report and identify the major components.

### Instructions

Go to the Annual Reports website, select a company of your choice, and then answer the following questions.

**a.** What is the company's name?

**b.** What classes of capital stock has the company issued?

**c.** For each class of stock:

**1.** How many shares are authorized, issued, and/or outstanding?

**2.** What is the par value?

**d.** What are the company's retained earnings?

**e.** Has the company acquired treasury stock? How many shares?

## Decision-Making Across the Organization

**CT13.5** The stockholders' meeting for Percival Corporation has been in progress for some time. The chief financial officer for Percival is presently reviewing the company's financial statements and is explaining the items that comprise the stockholders' equity section of the balance sheet for the current year. The stockholders' equity section of Percival Corporation at December 31, 2020, is as follows.

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**Percival Corporation**
**Balance Sheet (partial)**
**December 31, 2020**

| | | |
|---|---|---|
| Stockholders' equity | | |
| Paid-in capital | | |
| Capital stock | | |
| Preferred stock, authorized 1,000,000 shares, $100 par value, 6,000 shares issued and outstanding | $ 600,000 | |
| Common stock, authorized 5,000,000 shares, $1 par value, 3,000,000 shares issued, and 2,700,000 outstanding | 3,000,000 | |
| Total capital stock | | $ 3,600,000 |
| Additional paid-in capital | | |
| In excess of par—preferred stock | 50,000 | |
| In excess of par—common stock | 25,000,000 | |
| Total additional paid-in capital | | 25,050,000 |
| Total paid-in capital | | 28,650,000 |
| Retained earnings | | 900,000 |
| Total paid-in capital and retained earnings | | 29,550,000 |
| Less: Treasury stock (300,000 common shares) | | 9,300,000 |
| Total stockholders' equity | | $20,250,000 |

At the meeting, stockholders have raised a number of questions regarding the stockholders' equity section.

### Instructions

With the class divided into groups, answer the following questions as if you were the chief financial officer for Percival Corporation.

**a.** "I thought the common stock was presently selling at $29.75, but the company has the stock stated at $1 per share. How can that be?"

**b.** "Why is the company buying back its common stock? Furthermore, the treasury stock has a debit balance because it is subtracted from stockholders' equity. Why is treasury stock not reported as an asset if it has a debit balance?"

## Communication Activity

**CT13.6** Joe Moyer, your uncle, is an inventor who has decided to incorporate. Uncle Joe knows that you are an accounting major at U.N.O. In a recent letter to you, he ends with the question, "I'm filling out a state incorporation application. Can you tell me the difference in the following terms: (1) authorized stock, (2) issued stock, (3) outstanding stock, and (4) preferred stock?"

### Instructions

In a brief note, differentiate for Uncle Joe among the four different stock terms. Write the letter to be friendly, yet professional.

## All About You

**CT13.7** A high percentage of Americans own stock in corporations. As a shareholder in a corporation, you will receive an annual report. **One of the goals of this course is for you to learn how to navigate your way around an annual report.**

### Instructions

Use **Apple**'s 2015 annual report provided in Appendix A to answer the following questions.

**a.** What CPA firm performed the audit of Apple's financial statements?

**b.** What was the amount of Apple's earnings per share in 2015?

**c.** What were net sales in 2015?

**d.** How much cash did Apple spend on capital expenditures in 2015?

**e.** Over what life does the company depreciate its buildings?

**f.** What were the proceeds from issuance of common stock in 2015?

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### FASB Codification Activity

**CT13.8** If your school has a subscription to the FASB Codification, log in and prepare responses to the following.

**a.** How is common stock defined?

**b.** How is preferred stock defined?

**c.** What is the meaning of the term shares?

## A Look at IFRS

**LEARNING OBJECTIVE 4**

Compare the accounting for stockholders' equity under GAAP and IFRS.

The accounting for transactions related to stockholders' equity, such as issuance of shares and purchase of treasury stock, are similar under both IFRS and GAAP. Major differences relate to terminology used, introduction of items such as revaluation surplus, and presentation of stockholders' equity information.

### Key Points

Following are the key similarities and differences between GAAP and IFRS as related to stockholders' equity.

#### Similarities

- Aside from terminology used, the accounting transactions for the issuance of shares and the purchase of treasury stocks are similar.
- Like GAAP, IFRS does not allow a company to record gains or losses on purchases of its own shares.

#### Differences

- Under IFRS, the term **reserves** is used to describe all equity accounts other than those arising from contributed (paid-in) capital. This would include, for example, reserves related to retained earnings, asset revaluations, and fair value differences.
- Many countries have a different mix of investor groups than in the United States. For example, in Germany, financial institutions like banks are not only major creditors of corporations but often are the largest corporate stockholders as well. In the United States, Asia, and the United Kingdom, many companies rely on substantial investment from private investors.
- There are often terminology differences for equity accounts. The following summarizes some of the common differences in terminology.

| GAAP | IFRS |
|---|---|
| Common stock | Share capital—ordinary |
| Stockholders | Shareholders |
| Par value | Nominal or face value |
| Authorized stock | Authorized share capital |
| Preferred stock | Share capital—preference |
| Paid-in capital | Issued/allocated share capital |
| Paid-in capital in excess of par—common stock | Share premium—ordinary |
| Paid-in capital in excess of par—preferred stock | Share premium—preference |
| Retained earnings | Retained earnings or Retained profits |
| Retained earnings deficit | Accumulated losses |
| Accumulated other comprehensive income | General reserve and other reserve accounts |

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As an example of how similar transactions use different terminology under IFRS, consider the accounting for the issuance of 1,000 shares of $1 par value common stock for $5 per share. Under IFRS, the entry is as follows.

| | | |
|---|---|---|
| Cash | 5,000 | |
| Share Capital—Ordinary | | 1,000 |
| Share Premium—Ordinary | | 4,000 |

- A major difference between IFRS and GAAP relates to the account Revaluation Surplus. Revaluation surplus arises under IFRS because companies are permitted to revalue their property, plant, and equipment to fair value under certain circumstances. This account is part of general reserves under IFRS and is not considered contributed capital.
- IFRS often uses terms such as **retained profits** or **accumulated profit or loss** to describe retained earnings. The term **retained earnings** is also often used.
- Equity is given various descriptions under IFRS, such as shareholders' equity, owners' equity, capital and reserves, and shareholders' funds.

### Looking to the Future

As indicated in earlier discussions, the IASB and the FASB are currently working on a project related to financial statement presentation. An important part of this study is to determine whether certain line items, subtotals, and totals should be clearly defined and required to be displayed in the financial statements.

## IFRS Practice

### IFRS Self-Test Questions

1. Which of the following is **true**?
   - **a.** In the United States, the primary corporate stockholders are financial institutions.
   - **b.** Share capital means total assets under IFRS.
   - **c.** The IASB and FASB are presently studying how financial statement information should be presented.
   - **d.** The accounting for treasury stock differs extensively between GAAP and IFRS.
2. Under IFRS, the amount of capital received in excess of par value would be credited to:
   - **a.** Retained Earnings.
   - **b.** Contributed Capital.
   - **c.** Share Premium.
   - **d.** Par value is not used under IFRS.
3. Which of the following is **false**?
   - **a.** Under GAAP, companies cannot record gains on transactions involving their own shares.
   - **b.** Under IFRS, companies cannot record gains on transactions involving their own shares.
   - **c.** Under IFRS, the statement of stockholders' equity is a required statement.
   - **d.** Under IFRS, a company records a revaluation surplus when it experiences an increase in the price of its common stock.
4. Which of the following does **not** represent a pair of GAAP/IFRS-comparable terms?
   - **a.** Additional paid-in capital/Share premium.
   - **b.** Treasury stock/Repurchase reserve.
   - **c.** Common stock/Share capital.
   - **d.** Preferred stock/Preference shares.

### IFRS Exercises

**IFRS13.1** On May 10, Jaurez Corporation issues 1,000 shares of $10 par value ordinary shares for cash at $18 per share. Journalize the issuance of the shares.

**IFRS13.2** Meenen Corporation has the following accounts at December 31 (in euros): Share Capital—Ordinary, €10 par, 5,000 shares issued, €50,000; Share Premium—Ordinary €10,000; Retained Earnings €45,000; and Treasury Shares—Ordinary, 500 shares, €11,000. Prepare the equity section of the statement of financial position.

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**IFRS13.3** Overton Co. had the following transactions during the current period.

| | | |
|---|---|---|
| Mar. | 2 | Issued 5,000 shares of $1 par value ordinary shares to attorneys in payment of a bill for $30,000 for services performed in helping the company to incorporate. |
| June | 12 | Issued 60,000 shares of $1 par value ordinary shares for cash of $375,000. |
| July | 11 | Issued 1,000 shares of $100 par value preference shares for cash at $110 per share. |
| Nov. | 28 | Purchased 2,000 treasury shares for $80,000. |

### Instructions

Journalize the above transactions.

## International Financial Reporting Problem: Louis Vuitton

**IFRS13.4** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

### Instructions

Use the company's annual report to answer the following questions.

**a.** Determine the following amounts at December 31, 2015: (1) total equity, (2) total revaluation reserve, and (3) number of treasury shares.

**b.** Examine the equity section of the company's balance sheet. For each of the following, provide the comparable label that would be used under GAAP: (1) share capital, (2) share premium, and (3) net profit, group share.

### Answers to IFRS Self-Test Questions

**1.** c **2.** c **3.** d **4.** b

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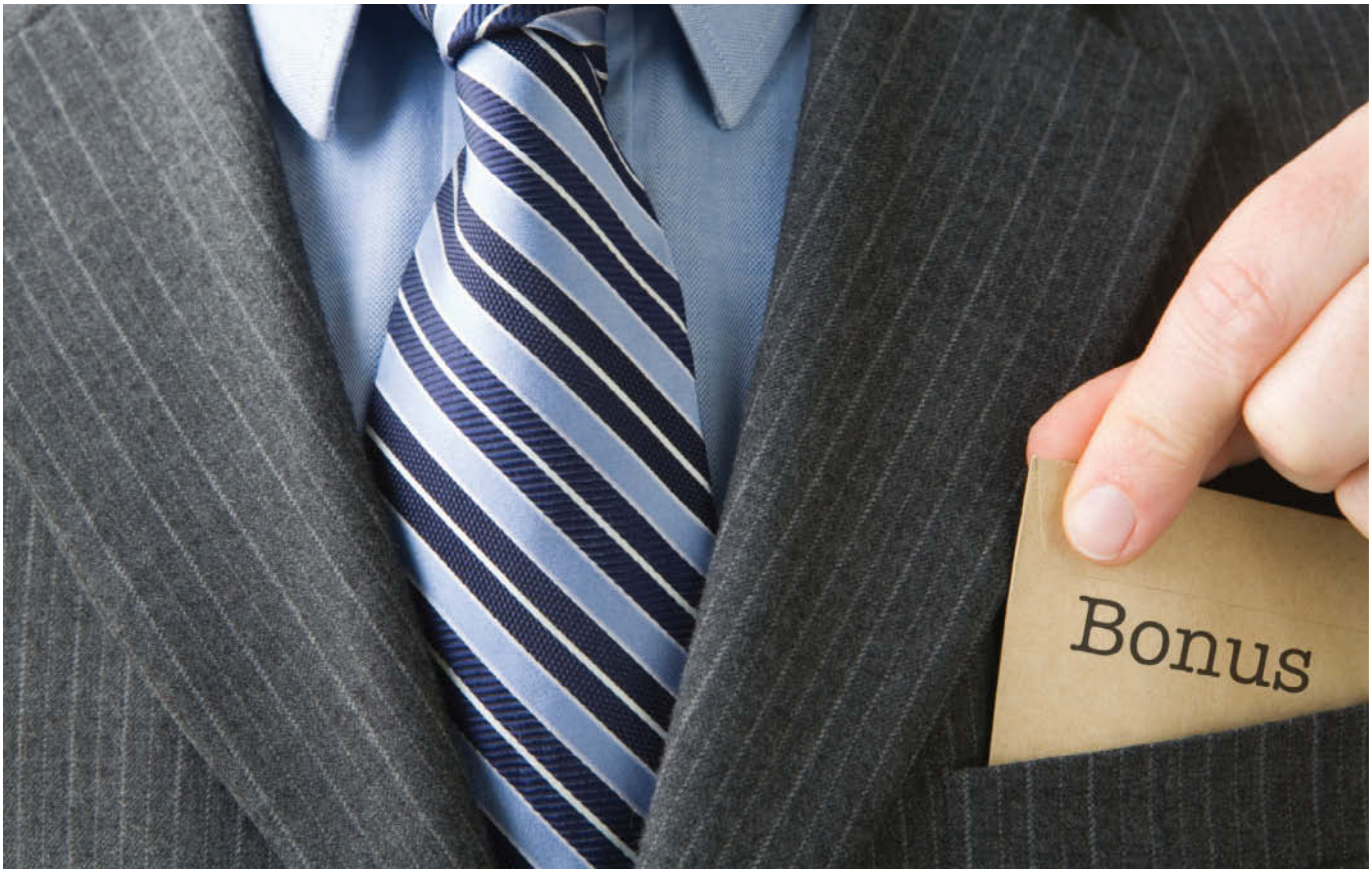


Daisy Daisy/Photographer's Choice/Getty Images, Inc.

# Corporations: Dividends, Retained Earnings, and Income Reporting

## Chapter Preview

As indicated in the following Feature Story, a profitable corporation like **Van Meter Inc.** can provide real benefits to employees through its stock bonus plan. And as employees learn more about the role of dividends, retained earnings, and earnings per share, they develop an understanding and appreciation for what the company is providing to them.

## Feature Story

### Owning a Piece of the Action

**Van Meter Inc.**, an electrical-parts distributor in Cedar Rapids, Iowa, is 100% employee-owned. For many years, the company has issued bonuses in the form of shares of company stock to all of its employees. These bonus distributions typically have a value equal to several weeks of pay. Top management always thought that this was a great program. Therefore, it came as quite a surprise a few years ago when an employee stood up at a company-wide meeting and said that he did not see any real value in receiving the company's shares. Instead, he wanted "a few hundred extra bucks for beer and cigarettes."

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As it turned out, many of the company's 340 employees felt this way. Rather than end the stock bonus program, however, the company decided to educate its employees on the value of share ownership. The employees are now taught how to determine the worth of their shares, the rights that come with share ownership, and what they can do to help increase the value of those shares.

As part of the education program, management developed a slogan, "Work ten, get five free." The idea is that after working 10 years, an employee's shares would be worth the equivalent of about five years' worth of salary. For example, a person earning a $30,000 salary would earn $300,000 in wages over a 10-year period. During that same 10-year period, it was likely that the value of the employee's shares would accumulate to about $150,000 (five years' worth of salary). This demonstrates in more concrete terms why employees should be excited about share ownership.

A 12-member employee committee has the responsibility of educating new employees about the program. The committee also runs training programs so that employees understand how their cost-saving actions improve the company's results—and its stock price. It appears that the company's education program to encourage employees to act like owners is working. Profitability has increased rapidly, and employee turnover has fallen from 18% to 8%. Given Van Meter's success, many of the 10,000 other employee-owned companies in the United States might want to investigate whether their employees understand the benefits of share ownership.

**Source:** Adapted from Simona Covel, "How to Get Workers to Think and Act Like Owners," *Wall Street Journal Online* (February 15, 2008).

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Explain how to account for cash dividends, stock dividends, and stock splits. | • Cash dividends<br>• Dividend preferences<br>• Stock dividends<br>• Stock splits | **DO IT! 1a** Dividends on Preferred and Common Stock<br>**DO IT! 1b** Stock Dividends and Stock Splits |
| **LO 2** Discuss how stockholders' equity is reported and analyzed. | • Retained earnings<br>• Statement presentation and analysis | **DO IT! 2** Analyzing Stockholders' Equity |
| **LO 3** Describe the form and content of corporation income statements. | • Income statement presentation<br>• Income statement analysis | **DO IT! 3** EPS |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

# Accounting for Dividends and Stock Splits

### LEARNING OBJECTIVE 1

Explain how to account for cash dividends, stock dividends, and stock splits.

**A dividend is a corporation's distribution of cash or stock to its stockholders on a pro rata (proportional to ownership) basis.** Pro rata means that if you own 10% of the common shares, you will receive 10% of the dividend. Dividends can take four forms: cash, property, scrip (a promissory note to pay cash), or stock. Cash dividends predominate in practice although companies also declare stock dividends with some frequency. These two forms of dividends are therefore the focus of discussion in this chapter.

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Investors are very interested in a company's dividend practices. In the financial press, **dividends are generally reported quarterly as a dollar amount per share**. (Sometimes they are reported on an annual basis.) For example, the recent **quarterly** dividend rate was 24 cents per share for **Nike**, 22 cents per share for **GE**, and 25 cents per share for **ConAgra Foods**. **Facebook** does not pay dividends.

# Cash Dividends

A **cash dividend** is a pro rata distribution of cash to stockholders. Cash dividends are not paid on treasury shares. For a corporation to pay a cash dividend, it must have the following.

1. **Retained earnings.** The legality of a cash dividend depends on the laws of the state in which the company is incorporated. Payment of cash dividends from retained earnings is legal in all states. In general, cash dividend distributions from only the balance in common stock (legal capital) are illegal.

   A dividend declared out of paid-in capital is termed a **liquidating dividend**. Such a dividend reduces or "liquidates" the amount originally paid in by stockholders. Statutes vary considerably with respect to cash dividends based on paid-in capital in excess of par or stated value. Many states permit such dividends.

2. **Adequate cash.** The legality of a dividend and the ability to pay a dividend are two different things. For example, **Best Buy**, with retained earnings of over $4.4 billion, could legally declare a dividend of at least $4.4 billion. But Best Buy's cash balance is only $2.2 billion.

   Before declaring a cash dividend, a company's board of directors must carefully consider both current and future demands on the company's cash resources. In some cases, current liabilities may make a cash dividend inappropriate. In other cases, a major plant expansion program may warrant only a relatively small dividend.

3. **Declared dividends.** A company does not pay dividends unless its board of directors decides to do so, at which point the board "declares" the dividend. The board of directors has full authority to determine the amount of income to distribute in the form of a dividend and the amount to retain in the business. Dividends do not accrue like interest on a note payable, and they are not a liability until declared.

The amount and timing of a dividend are important issues for management to consider. The payment of a large cash dividend could lead to liquidity problems for the company. On the other hand, a small dividend or a missed dividend may cause unhappiness among stockholders. Many stockholders expect to receive a reasonable cash payment from the company on a periodic basis. Many companies declare and pay cash dividends quarterly. On the other hand, a number of high-growth companies pay no dividends, preferring to conserve cash to finance future capital expenditures.

## Entries for Cash Dividends

Three dates are important in connection with dividends: (1) the declaration date, (2) the record date, and (3) the payment date. Normally, there are two to four weeks between each date. Companies make accounting entries on the declaration date and the payment date.

On the **declaration date**, the board of directors formally declares (authorizes) the cash dividend and announces it to stockholders. The declaration of a cash dividend **commits the corporation to a legal obligation**. The company must make an entry to recognize the increase in Cash Dividends and the increase in the liability Dividends Payable.

To illustrate, assume that on December 1, 2020, the directors of Media General declare a 50 cents per share cash dividend on 100,000 shares of $10 par value common stock. The dividend is $50,000 (100,000 × $0.50). The entry to record the declaration is as follows.

**Declaration Date**

| | | | |
|---|---|---|---|
| Dec. 1 | Cash Dividends | 50,000 | |
| | Dividends Payable | | 50,000 |
| | (To record declaration of cash dividend) | | |

A = L + SE
−50,000 Div
+50,000

**Cash Flows**
no effect

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Media General debits the account Cash Dividends. Cash dividends decrease retained earnings. We use the specific title Cash Dividends to differentiate it from other types of dividends, such as stock dividends. Dividends Payable is a current liability. It will normally be paid within the next several months. *For homework problems, you should use the Cash Dividends account for recording cash dividend declarations.*

**HELPFUL HINT**

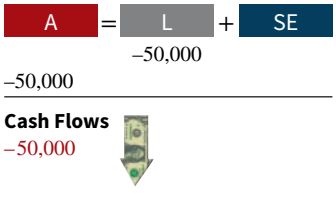
**The purpose of the record date is to identify the persons or entities that will receive the dividend, not to determine the amount of the dividend liability.**

At the **record date**, the company determines ownership of the outstanding shares for dividend purposes (see **Helpful Hint**). The stockholders' records maintained by the corporation supply this information. In the interval between the declaration date and the record date, the corporation updates its stock ownership records. For Media General, the record date is December 22. No entry is required on this date because the corporation's liability recognized on the declaration date is unchanged.

**Record Date**

| | | | |
|---|---|---|---|
| Dec. 22 | No entry | | |

On the **payment date**, the company makes cash dividend payments to the stockholders of record (as of December 22) and records the payment of the dividend. If January 20 is the payment date for Media General, the entry on that date is as follows.

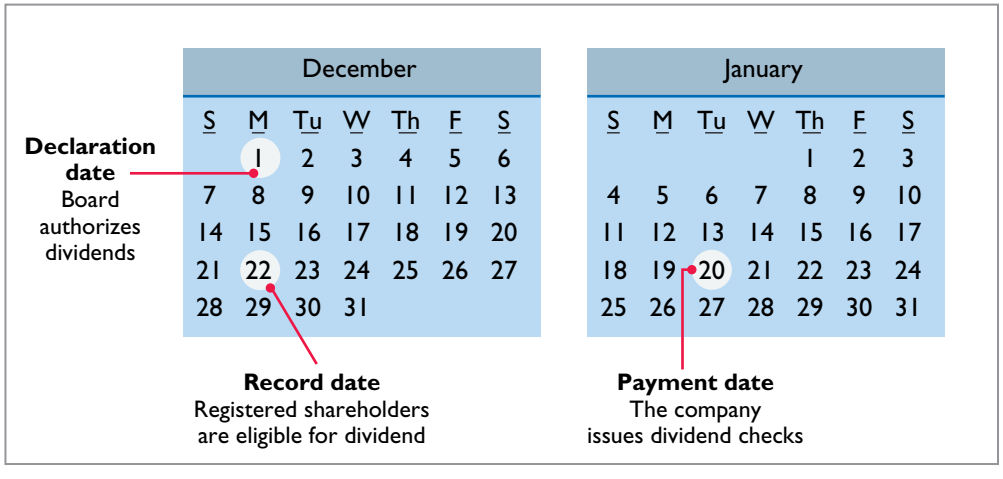



**Payment Date**

| | | | |
|---|---|---|---|
| Jan. 20 | Dividends Payable | 50,000 | |
| | Cash | | 50,000 |
| | (To record payment of cash dividend) | | |

Note that payment of the dividend reduces both current assets and current liabilities. It has no effect on stockholders' equity. The cumulative effect of the declaration and payment of a cash dividend is to **decrease both stockholders' equity and total assets**. **Illustration 14.1** summarizes the three important dates associated with dividends for Media General.

**ILLUSTRATION 14.1**
**Key dividend dates**


December
S M Tu W Th F S
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30 31
January
S M Tu W Th F S
1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 31
Declaration date
Board authorizes dividends
Record date
Registered shareholders are eligible for dividend
Payment date
The company issues dividend checks

When using a Cash Dividends account, Media General should transfer the balance of that account to Retained Earnings at the end of the year by a closing entry. The entry for Media General at closing is as follows.

| | | |
|---|---|---|
| Retained Earnings | 50,000 | |
| Cash Dividends | | 50,000 |
| (To close Cash Dividends to Retained Earnings) | | |

## Dividend Preferences

**Preferred stockholders have the right to receive dividends before common stockholders.** For example, if the dividend rate on preferred stock is $5 per share, common shareholders

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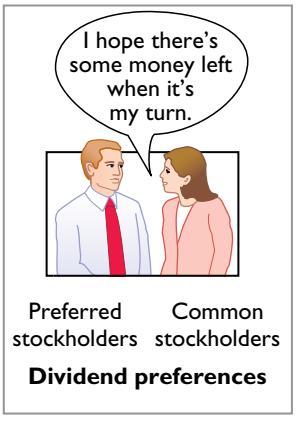
cannot receive any dividends in the current year until preferred stockholders have received $5 per share. The first claim to dividends does not, however, **guarantee** the payment of dividends. Dividends depend on many factors, such as adequate retained earnings and availability of cash. If a company does not pay dividends to preferred stockholders, it cannot pay dividends to common stockholders.

For preferred stock, companies state the per share dividend amount as a percentage of the par value or as a specified amount. For example, **Earthlink** specifies a 3% dividend on its $100 par value preferred. **PepsiCo** pays $4.56 per share on its no-par value stock.

Most preferred stocks also have a preference on corporate assets if the corporation fails. This feature provides security for the preferred stockholder. The preference to assets may be for the par value of the shares or for a specified liquidating value. For example, **Commonwealth Edison**'s preferred stock entitles its holders to receive $31.80 per share, plus accrued and unpaid dividends, in the event of liquidation. The liquidation preference establishes the respective claims of creditors and preferred stockholders in litigation involving bankruptcy lawsuits.



**Dividend preferences**

## Cumulative Dividend

Preferred stock often contains a **cumulative dividend** feature. This feature stipulates that preferred stockholders must be paid both current-year dividends and any unpaid prior-year dividends before common stockholders are paid dividends. When preferred stock is cumulative, preferred dividends not declared in a given period are called **dividends in arrears**.

To illustrate, assume that Scientific Leasing has 5,000 shares of 7%, $100 par value, cumulative preferred stock outstanding. Each $100 share pays a $7 dividend (.07 × $100). The annual dividend is $35,000 (5,000 × $7 per share). If dividends are two years in arrears, preferred stockholders are entitled to receive the dividends shown in **Illustration 14.2**.

| | |
|---|---|
| Dividends in arrears ($35,000 × 2) | $ 70,000 |
| Current-year dividends | 35,000 |
| **Total preferred dividends** | **$105,000** |

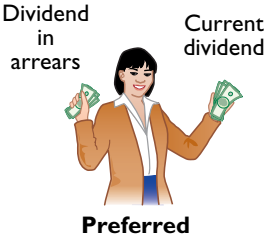
**ILLUSTRATION 14.2**
**Computation of total dividends to preferred stock**

The company cannot pay dividends to common stockholders until it pays the entire preferred dividend. In other words, companies cannot pay dividends to common stockholders while any preferred dividends are in arrears.

**Dividends in arrears are not considered a liability. No obligation exists until the board of directors formally declares that the corporation will pay a dividend.** However, companies should disclose in the notes to the financial statements the amount of dividends in arrears. Doing so enables investors to assess the potential impact of this commitment on the corporation's financial position.

The investment community does not look favorably on companies that are unable to meet their dividend obligations. As a financial officer noted in discussing one company's failure to pay its cumulative preferred dividend for a period of time, "Not meeting your obligations on something like that is a major black mark on your record."

**Payment of a cumulative dividend**




## Allocating Cash Dividends Between Preferred and Common Stock

As indicated, preferred stock has priority over common stock in regard to dividends. Holders of cumulative preferred stock must be paid any unpaid prior-year dividends and their current year's dividend before common stockholders receive dividends.

To illustrate, assume that at December 31, 2020, IBR Inc. has 1,000 shares of 8%, $100 par value cumulative preferred stock. It also has 50,000 shares of $10 par value common stock outstanding. The dividend per share for preferred stock is $8 ($100 par value × 8%). The required annual dividend for preferred stock is therefore $8,000 (1,000 shares × $8). At December 31, 2020, the directors declare a $6,000 cash dividend. In this case, the entire dividend amount goes to preferred stockholders because of their dividend preference. The entry to record the declaration of the dividend is as follows.

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| A | = | L | + | SE |
|---|---|---|---|---|
| | | | | −6,000 Div |
| +6,000 | | | | |

**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| Dec. 31 | Cash Dividends | 6,000 | |
| | Dividends Payable | | 6,000 |
| | (To record $6 per share cash dividend to preferred stockholders) | | |

Because of the cumulative feature, dividends of $2 ($8 − $6) per share are in arrears on preferred stock for 2020. IBR must pay these dividends to preferred stockholders before it can pay any future dividends to common stockholders. IBR should disclose dividends in arrears in the financial statements.

At December 31, 2021, IBR declares a $50,000 cash dividend. **Illustration 14.3** shows the allocation of the dividend to the two classes of stock.

**ILLUSTRATION 14.3**
**Allocating dividends to preferred and common stock**

| | | |
|---|---|---|
| Total dividend | | $50,000 |
| Allocated to preferred stock | | |
| **Dividends in arrears, 2020 (1,000 × $2)** | **$2,000** | |
| **2021 dividend (1,000 × $8)** | **8,000** | **10,000** |
| Remainder allocated to common stock | | $40,000 |

The entry to record the declaration of the dividend is as follows.

| A | = | L | + | SE |
|---|---|---|---|---|
| | | | | −50,000 Div |
| +50,000 | | | | |

**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| Dec. 31 | Cash Dividends | 50,000 | |
| | Dividends Payable | | 50,000 |
| | (To record declaration of cash dividends of $10,000 to preferred stock and $40,000 to common stock) | | |

If IBR's preferred stock is not cumulative, preferred stockholders receive only $8,000 in dividends in 2021. Common stockholders receive $42,000.

## Investor Insight

Palto/iStockphoto

### What About Dividends?

If you have some excess dollars that you want to invest, you might consider stocks that pay dividends. According to data from the **Standard & Poor's (S&P)** Dow Jones Indices, dividend income made up 33% of the monthly return of the S&P 500 between 1926 and 2015. What that means is that dividends comprise one-third of the return to shareholders.

In addition, data from 1927 to 2014 indicate that dividend payers outperformed non-dividend payers, averaging 10.4% annual growth versus 8.5%. If you do not think that difference is much, the table indicates how an annual investment of $10,000 would grow at each of these rates.

| Growth Over | 8.5% Annual Growth Rate | 10.4% Annual Growth Rate |
|---|---|---|
| 10 years | $ 161,000 | $ 179,400 |
| 20 years | 524,900 | 661,800 |
| 30 years | 1,300,000 | 2,000,000 |

Some companies have strong dividend yields, such as **Ford Motor Company** and **AT&T**. Others have been increasing dividend payouts at a strong clip such as **UPS**, **Microsoft**, and **Boeing**. Good luck in your future investing!

**Source:** Selena Maranjian, "Dividend Stocks in 2017: 7 Stats Everyone Should Know," *The Motley Fool* (December 14, 2016).

**What factors must management consider in deciding how large a dividend to pay? (Go to WileyPLUS for this answer and additional questions.)**

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### DO IT! 1a | Dividends on Preferred and Common Stock

MasterMind Corporation has 2,000 shares of 6%, $100 par value preferred stock outstanding at December 31, 2020. At December 31, 2020, the company declared a $60,000 cash dividend. Determine the dividend paid to preferred stockholders and common stockholders under each of the following scenarios.

1. The preferred stock is noncumulative, and the company has not missed any dividends in previous years.
2. The preferred stock is noncumulative, and the company did not pay a dividend in each of the two previous years.
3. The preferred stock is cumulative, and the company did not pay a dividend in each of the two previous years.

**ACTION PLAN**

- Determine dividends on preferred shares by multiplying the dividend rate times the par value of the stock times the number of preferred shares.
- Understand the cumulative feature. If preferred stock is cumulative, then any missed dividends (dividends in arrears) and the current year's dividend must be paid to preferred stockholders before dividends are paid to common stockholders.

**Solution**

1. The company has not missed past dividends and the preferred stock is noncumulative. Thus, the preferred stockholders are paid only this year's dividend. The dividend paid to preferred stockholders would be $12,000 (2,000 × .06 × $100). The dividend paid to common stockholders would be $48,000 ($60,000 − $12,000).
2. The preferred stock is noncumulative. Thus, past unpaid dividends do not have to be paid. The dividend paid to preferred stockholders would be $12,000 (2,000 × .06 × $100). The dividend paid to common stockholders would be $48,000 ($60,000 − $12,000).
3. The preferred stock is cumulative. Thus, dividends that have been missed (dividends in arrears) must be paid. The dividend paid to preferred stockholders would be $36,000 (3 × 2,000 × .06 × $100). Of the $36,000, $24,000 relates to dividends in arrears and $12,000 relates to the current dividend on preferred stock. The dividend paid to common stockholders would be $24,000 ($60,000 − $36,000).

Related exercise material: **BE14.2, DO IT! 14.1a, and E14.2.**

## Stock Dividends

A **stock dividend** is a pro rata (proportional to ownership) distribution of the corporation's own stock to stockholders. Whereas a company pays cash in a cash dividend, a company issues shares of stock in a stock dividend. **A stock dividend results in a decrease in retained earnings and an increase in paid-in capital.** Unlike a cash dividend, a stock dividend does not decrease total stockholders' equity or total assets.

To illustrate, assume that you have a 2% ownership interest in Cetus Inc. That is, you own 20 of its 1,000 shares of common stock. If Cetus declares a 10% stock dividend, it would issue 100 shares (1,000 × 10%) of stock. You would receive two shares (2% × 100). Would your ownership interest change? No, it would remain at 2% (22 ÷ 1,100). **You now own more shares of stock, but your ownership interest has not changed.**

Cetus has disbursed no cash and has assumed no liabilities. What, then, are the purposes and benefits of a stock dividend? Corporations issue stock dividends generally for one or more of the following reasons.

1. To satisfy stockholders' dividend expectations without spending cash.
2. To increase the marketability of the corporation's stock. When the number of shares outstanding increases, the market price per share decreases. Decreasing the market price of the stock makes it easier for smaller investors to purchase the shares.
3. To emphasize that a company has permanently reinvested in the business a portion of stockholders' equity, which therefore is unavailable for cash dividends.

When the dividend is declared, the board of directors determines the size of the stock dividend and the value assigned to each dividend.

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Generally, if the company issues a **small stock dividend** (less than 20–25% of the corporation's issued stock), the value assigned to the dividend is the fair value (market price) per share. This treatment is based on the assumption that a small stock dividend will have little effect on the market price of the shares previously outstanding. Thus, many stockholders consider small stock dividends to be distributions of earnings equal to the market price of the shares distributed. If a company issues a **large stock dividend** (greater than 20–25%), the price assigned to the dividend is the par or stated value. Small stock dividends predominate in practice. Thus, we will illustrate only entries for small stock dividends.

## Entries for Stock Dividends

To illustrate the accounting for small stock dividends, assume that Medland Corporation has a balance of $300,000 in retained earnings. It declares a 10% stock dividend on its 50,000 shares of $10 par value common stock. The current market price of its stock is $15 per share. The number of shares to be issued is 5,000 (10% × 50,000). Therefore, the total amount to be debited to Stock Dividends is $75,000 (5,000 × $15). The entry to record the declaration of the stock dividend is as follows.

A = L + SE
−75,000 Div
+50,000 CS
+25,000 CS

**Cash Flows**
no effect

| | | |
|---|---|---|
| Stock Dividends | 75,000 | |
| Common Stock Dividends Distributable | | 50,000 |
| Paid-in Capital in Excess of Par—Common Stock | | 25,000 |
| (To record declaration of 10% stock dividend) | | |

Medland debits Stock Dividends for the market price of the stock issued ($15 × 5,000). (Similar to Cash Dividends, Stock Dividends decrease retained earnings.) Medland also credits Common Stock Dividends Distributable for the par value of the dividend shares ($10 × 5,000) and credits Paid-in Capital in Excess of Par—Common Stock for the excess of the market price over par ($5 × 5,000).

Common Stock Dividends Distributable is a **stockholders' equity account**. It is not a liability because assets will not be used to pay the dividend. If the company prepares a balance sheet before it issues the dividend shares, it reports the distributable account under paid-in capital as shown in **Illustration 14.4**.

**ILLUSTRATION 14.4**
**Statement presentation of common stock dividends distributable**

| | |
|---|---|
| Paid-in capital | |
| Common stock | $500,000 |
| **Common stock dividends distributable** | **50,000** |
| In excess of par—common stock | 25,000 |
| Total paid-in capital | $575,000 |

When Medland issues the dividend shares, it debits Common Stock Dividends Distributable and credits Common Stock, as follows.

A = L + SE
−50,000 CS
+50,000 CS

**Cash Flows**
no effect

| | | |
|---|---|---|
| Common Stock Dividends Distributable | 50,000 | |
| Common Stock | | 50,000 |
| (To record issuance of 5,000 shares in a stock dividend) | | |

## Effects of Stock Dividends

How do stock dividends affect stockholders' equity? They **change the composition of stockholders' equity** because they transfer a portion of retained earnings to paid-in capital. However, **total stockholders' equity remains the same**. Stock dividends also have no effect on the par or stated value per share, but the number of shares outstanding increases. **Illustration 14.5** shows these effects for Medland.

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**ILLUSTRATION 14.5**
**Stock dividend effects**

| | Before Dividend | Change | After Dividend |
|---|---|---|---|
| Stockholders' equity | | | |
| Paid-in capital | | | |
| Common stock, $10 par | $500,000 | $ 50,000 | $550,000 |
| Paid-in capital in excess of par | — | 25,000 | 25,000 |
| Total paid-in capital | 500,000 | +75,000 | 575,000 |
| Retained earnings | 300,000 | −75,000 | 225,000 |
| **Total stockholders' equity** | **$800,000** | **$ 0** | **$800,000** |
| **Outstanding shares** | **50,000** | **+5,000** | **55,000** |
| **Par value per share** | **$10.00** | **$ 0** | **$10.00** |

In this example, total paid-in capital increases by $75,000 (50,000 shares × 10% × $15) and retained earnings decreases by the same amount. Note also that total stockholders' equity remains unchanged at $800,000. The number of shares increases by 5,000 (50,000 × 10%).

## Stock Splits

A **stock split**, like a stock dividend, involves issuance of additional shares to stockholders according to their percentage ownership. **However, a stock split results in a reduction in the par or stated value per share** (see **Helpful Hint**). The purpose of a stock split is to increase the marketability of the stock by lowering its market price per share. This, in turn, makes it easier for the corporation to issue additional stock.

The effect of a split on market price is generally **inversely proportional** to the size of the split. For example, after a 2-for-1 stock split, the market price of **Nike**'s stock fell from $111 to approximately $55. The lower market price stimulated market activity. Within one year, the stock was trading above $100 again. **Illustration 14.6** shows the effect of a 4-for-1 stock split for stockholders.

**HELPFUL HINT**
A stock split changes the par value per share but does not affect any balances in stockholders' equity.

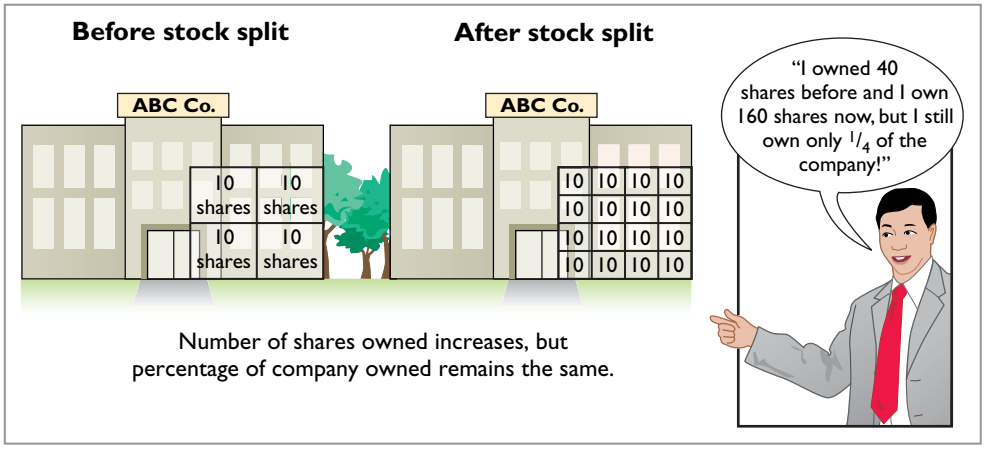
Before stock split
After stock split
ABC Co.
10 shares
10 shares
10 shares
10 shares
ABC Co.
"I owned 40 shares before and I own 160 shares now, but I still own only 1/4 of the company!"
Number of shares owned increases, but percentage of company owned remains the same.

**ILLUSTRATION 14.6**
**Effect of stock split for stockholders**

In a stock split, the company increases the number of shares in the same proportion that par or stated value per share decreases. For example, in a 2-for-1 split, the company exchanges one share of $10 par value stock for two shares of $5 par value stock. **A stock split does not have any effect on total paid-in capital, retained earnings, or total stockholders' equity.** However, the number of shares outstanding increases, and par value per share decreases. **Illustration 14.7** shows these effects for Medland Corporation, assuming that it splits its 50,000 shares of common stock on a 2-for-1 basis.

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**ILLUSTRATION 14.7**
**Stock split effects**

| | Before Stock Split | Change | After Stock Split |
|---|---|---|---|
| Stockholders' equity | | | |
| Paid-in capital | | | |
| Common stock | $500,000 | | $500,000 |
| Paid-in capital in excess of par | –0– | | –0– |
| Total paid-in capital | 500,000 | $ 0 | 500,000 |
| Retained earnings | 300,000 | 0 | 300,000 |
| **Total stockholders' equity** | **$800,000** | **$ 0** | **$800,000** |
| **Outstanding shares** | **50,000** | **+50,000** | **100,000** |
| **Par value per share** | **$10.00** | **–$5.00** | **$5.00** |

A stock split does not affect the balances in any stockholders' equity accounts. Therefore, **a company does not need to journalize a stock split**.

Illustration 14.8 summarizes the differences between stock dividends and stock splits.

**ILLUSTRATION 14.8**
**Differences between the effects of stock dividends and stock splits**

| Item | Stock Dividend | Stock Split |
|---|---|---|
| Total paid-in capital | Increase | No change |
| Total retained earnings | Decrease | No change |
| Total par value (common stock) | Increase | No change |
| Par value per share | No change | Decrease |
| Outstanding shares | Increase | Increase |
| Total stockholders' equity | No change | No change |

## Investor Insight — Berkshire Hathaway

Dietmar Klement/ iStockphoto

### A No-Split Philosophy

Warren Buffett's company, **Berkshire Hathaway**, has two classes of shares. Until recently, the company had never split either class of stock. As a result, the class A stock had a market price of $97,000 and the class B sold for about $3,200 per share. Because the price per share is so high, the stock does not trade as frequently as the stock of other companies. Buffett has always opposed stock splits because he feels that a lower stock price attracts short-term investors. He appears to be correct. For example, while more than 6 million shares of **IBM** are exchanged on the average day, only about 1,000 class A shares of Berkshire are traded. Despite Buffett's aversion to splits, in order to accomplish a recent acquisition, Berkshire decided to split its class B shares 50 to 1.

**Source:** Scott Patterson, "Berkshire Nears Smaller Baby B's," *Wall Street Journal Online* (January 19, 2010).

**Why does Warren Buffett usually oppose stock splits? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 1b | Stock Dividends and Stock Splits

Sing CD Company has had five years of record earnings. Due to this success, the market price of its 500,000 shares of $2 par value common stock has tripled from $15 per share to $45. During this period, paid-in capital remained the same at $2,000,000. Retained earnings increased from $1,500,000 to $10,000,000. President Joan Elbert is considering either a 10% stock dividend or a 2-for-1 stock split. She asks you to show the before-and-after effects of each option on retained earnings, total stockholders' equity, shares outstanding, and par value per share.

**ACTION PLAN**

- Calculate the stock dividend's effect on retained earnings by multiplying the number of new shares times the market price of the stock (or par value for a large stock dividend).

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**Solution**

The stock dividend amount is $2,250,000 [(500,000 × 10%) × $45]. The new balance in retained earnings is $7,750,000 ($10,000,000 − $2,250,000). The retained earnings balance after the stock split is the same as it was before the split: $10,000,000. Total stockholders' equity does not change. The effects on the stockholders' equity accounts are as follows.

| | Original Balances | After Dividend | After Split |
|---|---|---|---|
| Paid-in capital | $ 2,000,000 | $ 4,250,000 | $ 2,000,000 |
| Retained earnings | 10,000,000 | 7,750,000 | 10,000,000 |
| Total stockholders' equity | $12,000,000 | $12,000,000 | $12,000,000 |
| Shares outstanding | 500,000 | 550,000 | 1,000,000 |
| Par value per share | $2.00 | $2.00 | $1.00 |

Related exercise material: **BE14.3, BE14.4, DO IT! 14.1b, E14.4, E14.5, E14.6, and E14.7.**

- Recall that a stock dividend increases the number of shares without affecting total stockholders' equity.
- Recall that a stock split only increases the number of shares outstanding and decreases the par value per share.

# Reporting and Analyzing Stockholders' Equity

**LEARNING OBJECTIVE 2**

Discuss how stockholders' equity is reported and analyzed.

## Retained Earnings

**Retained earnings** is net income that a company retains in the business. The balance in retained earnings is part of the stockholders' claim on the total assets of the corporation. It does not, however, represent a claim on any specific asset. Nor can the amount of retained earnings be associated with the balance of any asset account. For example, a $100,000 balance in retained earnings does not mean that there should be $100,000 in cash. The reason is that the company may have used the cash resulting from the excess of revenues over expenses to purchase buildings, equipment, and other assets.

To demonstrate that retained earnings and cash may be quite different, **Illustration 14.9** shows recent amounts of retained earnings and cash in selected companies.

**ILLUSTRATION 14.9**
**Retained earnings and cash balances**

| | (in millions) | |
|---|---|---|
| Company | Retained Earnings | Cash |
| Facebook | $ 3,159 | $3,323 |
| Google | 61,262 | 8,989 |
| Nike, Inc. | 5,695 | 3,337 |
| Starbucks | 4,130 | 2,576 |
| Amazon.com | 2,190 | 8,658 |

Remember from Chapter 13 that when a company has net income, it closes net income to retained earnings. The closing entry is a debit to Income Summary and a credit to Retained Earnings (see **Helpful Hint**).

When a company has a **net loss** (expenses exceed revenues), it also closes this amount to retained earnings. The closing entry is a debit to Retained Earnings and a credit to Income

**HELPFUL HINT**

Remember that Retained Earnings is a stockholders' equity account, whose normal balance is a credit.

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Summary. To illustrate, assume that Rendle Corporation has a net loss of $400,000 in 2020. The closing entry to record this loss is as follows.

| | | |
|---|---|---|
| Retained Earnings | 400,000 | |
| Income Summary | | 400,000 |
| (To close net loss to Retained Earnings) | | |

This closing entry is prepared even if it results in a debit balance in Retained Earnings. **Companies do not debit net losses to paid-in capital accounts.** To do so would destroy the distinction between paid-in and earned capital. If cumulative losses exceed cumulative income over a company's life, a debit balance in Retained Earnings results. A debit balance in Retained Earnings is identified as a **deficit**. A company reports a deficit as a deduction in the stockholders' equity section, as shown in **Illustration 14.10**.

**ILLUSTRATION 14.10**
**Stockholders' equity with deficit**

| Balance Sheet (partial) | |
|---|---|
| Stockholders' equity | |
| Paid-in capital | |
| Common stock | $800,000 |
| **Retained earnings (deficit)** | **(50,000)** |
| Total stockholders' equity | $750,000 |

## Retained Earnings Restrictions

The balance in retained earnings is generally available for dividend declarations. In some cases, however, there may be **retained earnings restrictions**. These make a portion of the retained earnings balance currently unavailable for dividends. Restrictions result from one or more of the following causes.

1. **Legal restrictions.** Many states require a corporation to restrict retained earnings for the cost of treasury stock purchased. The restriction keeps intact the corporation's legal capital that is being temporarily held as treasury stock. When the company sells the treasury stock, the restriction is lifted.
2. **Contractual restrictions.** Long-term debt contracts may restrict retained earnings as a condition for the loan. The restriction limits the use of corporate assets for payment of dividends. Thus, it increases the likelihood that the corporation will be able to meet required loan payments.
3. **Voluntary restrictions.** The board of directors may voluntarily create retained earnings restrictions for specific purposes. For example, the board may authorize a restriction for future plant expansion. By reducing the amount of retained earnings available for dividends, the company makes more cash available for the planned expansion.

Companies generally disclose **retained earnings restrictions** in the notes to the financial statements. For example, as shown in **Illustration 14.11**, **Tektronix Inc.**, a manufacturer of electronic measurement devices, had total retained earnings of $774 million, but the unrestricted portion was only $223.8 million.

**ILLUSTRATION 14.11**
**Disclosure of restriction**

Real World

**Tektronix Inc.**
**Notes to the Financial Statements**

Certain of the Company's debt agreements require compliance with debt covenants. Management believes that the Company is in compliance with such requirements. The Company had unrestricted retained earnings of $223.8 million after meeting those requirements.

## Prior Period Adjustments

Suppose that a corporation has closed its books and issued financial statements. The corporation then discovers that it made a material error in reporting net income of a prior year. How should the company record this situation in the accounts and report it in the financial statements?

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The correction of an error in previously issued financial statements is known as a **prior period adjustment**. The company makes the correction directly to Retained Earnings because the effect of the error is now in this account. The net income for the prior period has been recorded in retained earnings through the journalizing and posting of closing entries.

To illustrate, assume that General Microwave discovers in 2020 that it understated depreciation expense on equipment in 2019 by $300,000 due to computational errors. These errors overstated both net income for 2019 and the current balance in retained earnings. The entry for the prior period adjustment, ignoring all tax effects, is as follows.

| | | |
|---|---|---|
| Retained Earnings | 300,000 | |
| Accumulated Depreciation—Equipment | | 300,000 |
| (To adjust for understatement of depreciation in a prior period) | | |

A = L + SE
−300,000 RE
−300,000

**Cash Flows**
no effect

A debit to an income statement account in 2020 is incorrect because the error pertains to a prior year.

Companies report prior period adjustments in the retained earnings statement. They add (or deduct, as the case may be) these adjustments from the beginning retained earnings balance. This results in an adjusted beginning balance. For example, assuming a beginning balance of $800,000 in retained earnings, General Microwave reports the prior period adjustment as shown in **Illustration 14.12**.

**ILLUSTRATION 14.12**
**Statement presentation of prior period adjustments**

**General Microwave**
**Retained Earnings Statement (partial)**

| | |
|---|---|
| Balance, January 1, as reported | $ 800,000 |
| **Correction for overstatement of net income in prior period (depreciation error)** | **(300,000)** |
| Balance, January 1, as adjusted | $ 500,000 |

Again, reporting the correction in the current year's income statement would be incorrect because it applies to a prior year's income statement.

### Retained Earnings Statement

The **retained earnings statement** shows the changes in retained earnings during the year. The company prepares the statement from the Retained Earnings account. **Illustration 14.13** shows (in T-account form) transactions that affect retained earnings.

**ILLUSTRATION 14.13**
**Debits and credits to retained earnings**

**Retained Earnings**

| | |
|---|---|
| 1. Net loss | 1. Net income |
| 2. Prior period adjustments for overstatement of net income | 2. Prior period adjustments for understatement of net income |
| 3. Cash dividends and stock dividends | |
| 4. Some disposals of treasury stock | |

As indicated, net income increases retained earnings, and a net loss decreases retained earnings. Prior period adjustments may either increase or decrease retained earnings. Both cash dividends and stock dividends decrease retained earnings. The circumstances under which treasury stock transactions decrease retained earnings are explained in Chapter 13.

## Statement Presentation and Analysis

### Presentation of Stockholders' Equity

**Illustration 14.14** presents the stockholders' equity section of Graber Inc.'s balance sheet. Note the following: (1) "Common stock dividends distributable" is shown under "Capital stock" in "Paid-in capital" and (2) a note (Note R) discloses a retained earnings restriction.

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**ILLUSTRATION 14.14**
**Comprehensive stockholders' equity section**

**Graber Inc.**
**Balance Sheet (partial)**

| | | |
|---|---|---|
| Stockholders' equity | | |
| Paid-in capital | | |
| Capital stock | | |
| 9% Preferred stock, $100 par value, cumulative, callable at $120, 10,000 shares authorized, 6,000 shares issued and outstanding | | $ 600,000 |
| Common stock, no par, $5 stated value, 500,000 shares authorized, 400,000 shares issued and 390,000 shares outstanding | $2,000,000 | |
| **Common stock dividends distributable** | **50,000** | 2,050,000 |
| Total capital stock | | 2,650,000 |
| Additional paid-in capital | | |
| In excess of par—preferred stock | 30,000 | |
| In excess of stated value—common stock | 1,050,000 | |
| Total additional paid-in capital | | 1,080,000 |
| Total paid-in capital | | 3,730,000 |
| Retained earnings **(see Note R)** | | 1,150,000 |
| Total paid-in capital and retained earnings | | 4,880,000 |
| Less: Treasury stock (10,000 common shares) | | 80,000 |
| Total stockholders' equity | | $4,800,000 |

**Note R: Retained earnings is restricted for the cost of treasury stock, $80,000.**

Instead of presenting a detailed stockholders' equity section in the balance sheet and a retained earnings statement, many companies prepare a **stockholders' equity statement** (see Appendix 14A). This statement shows the changes (1) in each stockholders' equity account and (2) in total that occurred during the year. An example of a stockholders' equity statement appears in **Apple**'s financial statements in Appendix A.

## Analysis of Stockholders' Equity

Investors are interested in both a company's dividend record and its earnings performance. Although those two measures are often parallel, that is not always the case. Thus, investors should investigate each one separately.

**Payout Ratio.** One way that companies reward stock investors for their investment is to pay them dividends. The **payout ratio** measures the percentage of earnings a company distributes in the form of cash dividends to common stockholders. It is computed by **dividing total cash dividends declared to common shareholders by net income**.

To illustrate, **Nike**'s dividends were recently $821 million and net income was $2,693 million. **Illustration 14.15** shows Nike's payout ratio.

**ILLUSTRATION 14.15**
**Nike's payout ratio**

| Cash Dividends Declared on Common Stock | ÷ | Net Income | = | Payout Ratio |
|---|---|---|---|---|
| $821 | ÷ | $2,693 | = | 30.5% |

Companies attempt to set their dividend rate at a level that will be sustainable. Companies that have high growth rates are characterized by low payout ratios because they reinvest most of their net income in the business. Thus, a low payout ratio is not necessarily bad news. Companies that believe they have many good opportunities for growth, such as **Facebook**, will reinvest those funds in the company rather than pay dividends. However, low dividend payments, or a cut in dividend payments, might signal that a company has liquidity or solvency problems and is trying to conserve cash by not paying dividends. Thus, investors and analysts should investigate the reason for low dividend payments.

**Illustration 14.16** lists recent payout ratios of four well-known companies.

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| Company | Payout Ratio |
|---|---|
| Microsoft | 24.5% |
| Kellogg | 43.3% |
| Facebook | 0% |
| Wal-Mart | 49.0% |

**ILLUSTRATION 14.16**
**Payout ratios of companies**

**Return on Common Stockholders' Equity.** Investors and analysts can measure profitability from the viewpoint of the common stockholder by the **return on common stockholders' equity**. This ratio indicates how many dollars of net income the company earned for each dollar invested by the common stockholders. It is computed by dividing **net income available to common stockholders** (which is net income minus preferred stock dividends) by average common stockholders' equity.

To illustrate, **Walt Disney Company**'s beginning-of-the-year and end-of-the-year common stockholders' equity were $31,820 and $30,753 million, respectively. Its net income was $4,687 million, and no preferred stock was outstanding. The return on common stockholders' equity is computed as shown in **Illustration 14.17**.

| Net Income minus Preferred Dividends | ÷ | Average Common Stockholders' Equity | = | Return on Common Stockholders' Equity |
|---|---|---|---|---|
| ($4,687 − $0) | ÷ | ($31,820 + $30,753) / 2 | = | 15.0% |

**ILLUSTRATION 14.17**
**Return on common stockholders' equity and computation**

As shown above, if a company has preferred stock, we would deduct the amount of **preferred dividends** from the company's net income to compute income available to common stockholders. Also, the par value of preferred stock is deducted from total stockholders' equity when computing the average common stockholders' equity.

## DO IT! 2 | Analyzing Stockholders' Equity

On January 1, 2020, Siena Corporation purchased 2,000 shares of treasury stock. Other information regarding Siena Corporation is provided below.

| | 2019 | 2020 |
|---|---|---|
| Net income | $110,000 | $110,000 |
| Dividends on preferred stock | $10,000 | $10,000 |
| Dividends on common stock | $2,000 | $1,600 |
| Common stockholders' equity, beginning of year | $500,000 | $400,000* |
| Common stockholders' equity, end of year | $500,000 | $400,000 |

*Adjusted for purchase of treasury stock.

(a) Compute return on common stockholders' equity for each year, and (b) discuss its change from 2019 to 2020.

**ACTION PLAN**

- Determine return on common stockholders' equity by dividing net income available to common stockholders by average common stockholders' equity.

### Solution

**a.**

| | 2019 | | 2020 | |
|---|---|---|---|---|
| Return on common stockholders' equity | ($110,000 − $10,000) / ($500,000 + $500,000)/2 | = 20% | ($110,000 − $10,000) / ($400,000 + $400,000)/2 | = 25% |

**b.** Between 2019 and 2020, return on common stockholders' equity improved from 20% to 25%. While this would appear to be good news for the company's common stockholders, this increase should be carefully evaluated. It is important to note that net income did not change during this period. The increase in the ratio was due to the purchase of treasury shares, which reduced the denominator of the ratio. As the company repurchases its own shares, it becomes more reliant on debt and thus increases its risk.

Related exercise material: **BE14.6, DO IT! 14.2, E14.8, E14.9, E14.10, E14.11, E14.13, E14.15, and E14.16.**

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# Corporate Income Statements

**LEARNING OBJECTIVE 3**

Describe the form and content of corporation income statements.

## Income Statement Presentation

Income statements for **corporations are the same as the statements for proprietorships or partnerships except for one thing: the reporting of income taxes**. For income tax purposes, corporations are a separate legal entity. As a result, corporations report **income tax expense** in a separate section of the corporation income statement, before net income. The condensed income statement for Leads Inc. in **Illustration 14.18** shows a typical presentation. Note that the corporation reports income before income taxes as one line item and income tax expense as another.

**ILLUSTRATION 14.18**
**Income statement with income taxes**

**Leads Inc.**
**Income Statement**
**For the Year Ended December 31, 2020**

| | |
|---|---|
| Sales revenue | $800,000 |
| Cost of goods sold | 600,000 |
| Gross profit | 200,000 |
| Operating expenses | 50,000 |
| Income from operations | 150,000 |
| Other revenues and gains | 10,000 |
| Other expenses and losses | (4,000) |
| **Income before income taxes** | **156,000** |
| **Income tax expense** | **46,800** |
| Net income | $109,200 |

Companies record income tax expense and the related liability for income taxes payable as part of the adjusting process. Using the data for Leads Inc., in Illustration 14.18, the adjusting entry for income tax expense at December 31, 2020, is as follows.

A = L + SE
–46,800 Exp
+46,800

**Cash Flows**
no effect

| | | |
|---|---|---|
| Income Tax Expense | 46,800 | |
| Income Taxes Payable | | 46,800 |
| (To record income taxes for 2020) | | |

The income statement of **Apple** (in Appendix A) presents another illustration of income taxes.

## Income Statement Analysis

The financial press frequently reports earnings data. Stockholders and potential investors widely use these data in evaluating the profitability of a company. A convenient measure of earnings is **earnings per share (EPS)**, which indicates the net income earned by each share of outstanding **common stock**.

### EPS and Preferred Dividends

The existence of preferred dividends slightly complicates the calculation of EPS. When a corporation has both preferred and common stock, we must subtract the current year's preferred dividend from net income, to arrive at **income available to common stockholders**. **Illustration 14.19** shows the formula for computing EPS.

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| Net Income minus Preferred Dividends | ÷ | Weighted-Average Common Shares Outstanding | = | Earnings per Share |
|---|---|---|---|---|

**ILLUSTRATION 14.19**
**Formula for earnings per share**

To illustrate, assume that Rally Inc. reports net income of $211,000 on its 102,500 weighted-average common shares.[1] During the year, it also declares a $6,000 dividend on its preferred stock. Therefore, the amount Rally has available for common stock dividends is $205,000 ($211,000 − $6,000). Earnings per share is $2 ($205,000 ÷ 102,500). If the preferred stock is cumulative, Rally deducts the dividend for the current year, whether or not it is declared. Remember that companies report **earnings per share only for common stock** (see **Ethics Note**).

**ETHICS NOTE**
**In order to meet market expectations for EPS, some managers engage in elaborate treasury stock transactions. These transactions can be very costly for the remaining shareholders.**

Investors often attempt to link earnings per share to the market price per share of a company's stock.[2] Because of the importance of earnings per share, most companies must report it on the face of the income statement. Generally, companies simply report this amount below net income on the statement. **Illustration 14.20** shows the presentation for Rally Inc.

**Rally Inc.**
**Income Statement (partial)**

| | |
|---|---|
| Net income | $211,000 |
| **Earnings per share** | **$2.00** |

**ILLUSTRATION 14.20**
**Basic earnings per share disclosure**

## DO IT! 3 | EPS

On January 1, 2020, Siena Corporation purchased 2,000 shares of treasury stock. Other information regarding Siena Corporation is provided below.

| | 2019 | 2020 |
|---|---|---|
| Net income | $110,000 | $110,000 |
| Dividends on preferred stock | $10,000 | $10,000 |
| Dividends on common stock | $2,000 | $1,600 |
| Weighted-average number of shares outstanding | 10,000 | 8,000* |
| Common stockholders' equity, beginning of year | $500,000 | $400,000* |
| Common stockholders' equity, end of year | $500,000 | $400,000 |

*Adjusted for purchase of treasury stock.

(a) Compute earnings per share for each year, and (b) discuss the change from 2019 to 2020.

**ACTION PLAN**
- **Determine return on common stockholders' equity by dividing net income available to common stockholders by the average common stockholders' equity.**
- **Determine earnings per share by dividing net income available to common stockholders by the weighted-average number of common shares outstanding.**

### Solution

| | | 2019 | | 2020 | |
|---|---|---|---|---|---|
| **a.** | Earnings per share | $\frac{(\$110{,}000 - \$10{,}000)}{10{,}000}$ | = $10 | $\frac{(\$110{,}000 - \$10{,}000)}{8{,}000}$ | = $12.50 |

**b.** Between 2019 and 2020, earnings per share increased from $10 to $12.50. While this would appear to be good news for the company's common stockholders, this increase should be carefully evaluated. It is important to note that net income did not change during this period. The increase was due to the purchase of treasury shares, which reduced the denominator of the ratio. As the company repurchases its own shares, it becomes more reliant on debt and thus increases its risk.

Related exercise material: **BE14.7, BE14.8, BE14.9, DO IT! 14.3, E14.12, E14.13, E14.14, E14.15, E14.16, and E14.17.**

[1]The calculation of the weighted average of common shares outstanding is discussed in advanced accounting courses.

[2]The ratio of the market price per share to the earnings per share is called the **price/earnings (P/E) ratio**. The financial media report this ratio for common stocks listed on major stock exchanges.

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# Appendix 14A Stockholders' Equity Statement

**LEARNING OBJECTIVE *4**

Describe the use and content of the stockholders' equity statement.

When balance sheets and income statements are presented by a corporation, changes in the separate accounts comprising stockholders' equity should also be disclosed. Disclosure of such changes is necessary to make the financial statements sufficiently informative for users. The disclosures may be made in an additional statement or in the notes to the financial statements.

Many corporations make the disclosures in a stockholders' equity statement. The statement shows the changes in **each** stockholders' equity account and in **total** stockholders' equity during the year. As shown in Illustration 14A.1, the stockholders' equity statement is prepared in columnar form. It contains columns for each account and for total stockholders' equity. The transactions are then identified and their effects are shown in the appropriate columns.

**ILLUSTRATION 14A.1** Stockholders' equity statement

**Hampton Corporation**
**Stockholders' Equity Statement**
**For the Year Ended December 31, 2020**

| | Common Stock ($5 Par) | Paid-in Capital in Excess of Par—Common Stock | Retained Earnings | Treasury Stock | Total |
|---|---|---|---|---|---|
| Balance January 1 | $300,000 | $200,000 | $650,000 | $(34,000) | $1,116,000 |
| Issued 5,000 shares of common stock at $15 | 25,000 | 50,000 | | | 75,000 |
| Declared a $40,000 cash dividend | | | (40,000) | | (40,000) |
| Purchased 2,000 shares for treasury at $16 | | | | (32,000) | (32,000) |
| Net income for year | | | 240,000 | | 240,000 |
| Balance December 31 | $325,000 | $250,000 | $850,000 | $(66,000) | $1,359,000 |

In practice, additional columns are usually provided to show the number of shares of issued stock and treasury stock. The stockholders' equity statement for PepsiCo for a three-year period is shown in Appendix B. **When a stockholders' equity statement is presented, a retained earnings statement is not necessary** because the retained earnings column explains the changes in this account.

# Appendix 14B Book Value per Share

**LEARNING OBJECTIVE *5**

Compute book value per share.

## Book Value per Share

You have learned about a number of per share amounts in this chapter. Another per share amount of some importance is book value per share. It represents **the equity a common**

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**stockholder has in the net assets of the corporation** from owning one share of stock. Remember that the net assets (total assets minus total liabilities) of a corporation must be equal to total stockholders' equity. Therefore, the formula for computing book value per share when a company has only one class of stock outstanding is as shown in **Illustration 14B.1**.

| Total Stockholders' Equity | ÷ | Number of Common Shares Outstanding | = | Book Value per Share |
|---|---|---|---|---|

**ILLUSTRATION 14B.1**
**Book value per share formula**

Thus, if Marlo Corporation has total stockholders' equity of $1,500,000 (common stock $1,000,000 and retained earnings $500,000) and 50,000 shares of common stock outstanding, book value per share is $30 ($1,500,000 ÷ 50,000).

When a company has both preferred and common stock, the computation of book value is more complex. Since preferred stockholders have a prior claim on net assets over common stockholders, their equity must be deducted from total stockholders' equity. Then, we can determine the stockholders' equity that applies to the common stock. The computation of book value per share involves the following steps.

1. **Compute the preferred stock equity.** This equity is equal to the sum of the call price of preferred stock plus any cumulative dividends in arrears. If the preferred stock does not have a call price, the par value of the stock is used.
2. **Determine the common stock equity.** Subtract the preferred stock equity from total stockholders' equity.
3. **Determine book value per share.** Divide common stock equity by shares of common stock outstanding.

## Example

We will use the stockholders' equity section of Graber Inc. shown in Illustration 14.14. Assume that Graber's preferred stock is callable at $120 per share and is cumulative, and that dividends on Graber's preferred stock were in arrears for one year, $54,000 (6,000 × $9). **Illustration 14B.2** shows the computation of preferred stock equity (Step 1 in the preceding list).

| | |
|---|---|
| Call price (6,000 shares × $120) | $720,000 |
| Dividends in arrears (6,000 shares × $9) | 54,000 |
| **Preferred stock equity** | **$774,000** |

**ILLUSTRATION 14B.2**
**Computation of preferred stock equity—Step 1**

The computation of book value (Steps 2 and 3) is as shown in **Illustration 14B.3**.

| | |
|---|---|
| Total stockholders' equity | $4,800,000 |
| Less: **Preferred stock equity** | **774,000** |
| **Common stock equity** | **$4,026,000** |
| **Shares of common stock outstanding** | **390,000** |
| **Book value per share** ($4,026,000 ÷ 390,000) | **$10.32** |

**ILLUSTRATION 14B.3**
**Computation of book value per share with preferred stock—Steps 2 and 3**

Note that we used a call price of $120 instead of the par value of $100. Note also that the paid-in capital in excess of par value of preferred stock, $30,000, **is not assigned to the preferred stock equity**. Preferred stockholders ordinarily do not have a right to amounts paid-in in excess of par value. Therefore, such amounts are assigned to the common stock equity in computing book value.

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## Book Value versus Market Price

Be sure you understand that **book value per share may not equal market price per share**. Book value generally is based on recorded costs. Market price reflects the subjective judgments of thousands of stockholders and prospective investors about a company's potential for future earnings and dividends. Market price per share may exceed book value per share, but that fact does not necessarily mean that the stock is overpriced. The correlation between book value and the annual range of a company's market price per share is often remote, as indicated by the recent data shown in **Illustration 14B.4**.

**ILLUSTRATION 14B.4**
**Book value and market prices compared**

| Company | Book Value (year-end) | Market Range (for the year) |
|---|---|---|
| The Limited, Inc. | $13.38 | $31.03–$22.89 |
| H. J. Heinz Company | $ 7.48 | $40.61–$34.53 |
| Cisco Systems | $ 3.66 | $21.24–$17.01 |
| Wal-Mart Stores, Inc. | $12.79 | $50.87–$42.31 |

Book value per share **is useful** in determining the trend of a stockholder's per share equity in a corporation. It is also significant in many contracts and in court cases where the rights of individual parties are based on cost information.

# Review and Practice

## Learning Objectives Review

**1 Explain how to account for cash dividends, stock dividends, and stock splits.**

**Cash Dividends.** Companies make entries for cash dividends at the declaration date and at the payment date. At the **declaration date**, the entry is debit Cash Dividends and credit Dividends Payable. At the **payment date**, the entry is debit Dividends Payable and credit Cash.

**Stock Dividends.** At the declaration date, the entry for a small stock dividend is debit Stock Dividends, credit Paid-in Capital in Excess of Par (or Stated Value)—Common Stock, and credit Common Stock Dividends Distributable. At the payment date, the entry for a small stock dividend is debit Common Stock Dividends Distributable and credit Common Stock.

**Stock Splits.** A stock split reduces the par or stated value per share and increases the number of shares but does not affect balances in stockholders' equity accounts.

**2 Discuss how stockholders' equity is reported and analyzed.**

Net income increases retained earnings. Deductions consist of net loss and cash and stock dividends. In some instances, portions of retained earnings are restricted, making that portion unavailable for the payment of dividends.

In the stockholders' equity section of the balance sheet, companies report paid-in capital and retained earnings and identify specific sources of paid-in capital. Within paid-in capital, companies show two classifications: capital stock and additional paid-in capital. If a corporation has treasury stock, it deducts the cost of treasury stock from total paid-in capital and retained earnings to determine total stockholders' equity.

A company's dividend record can be evaluated by looking at what percentage of net income it chooses to pay out in dividends, as measured by the payout ratio (dividends divided by net income). Earnings performance is measured with the return on common stockholders' equity (income available to common stockholders divided by average common stockholders' equity).

**3 Describe the form and content of corporation income statements.**

The form and content of corporation income statements are similar to the statements of proprietorships and partnerships with one exception: Corporations must report income taxes or income tax expense in a separate section before net income in the income statement.

Companies compute earnings per share by dividing net income by the weighted-average number of common shares outstanding during the period. When preferred stock dividends exist, they must be deducted from net income in order to calculate EPS.

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### *4 Describe the use and content of the stockholders' equity statement.

Corporations must disclose changes in stockholders' equity accounts and may choose to do so by issuing a separate stockholders' equity statement. This statement, prepared in columnar form, shows changes in each stockholders' equity account and in total stockholders' equity during the accounting period. When this statement is presented, a retained earnings statement is not necessary.

### *5 Compute book value per share.

Book value per share represents the equity a common stockholder has in the net assets of a corporation from owning one share of stock. When there is only common stock outstanding, the formula for computing book value is: Total stockholders' equity ÷ Number of common shares outstanding = Book value per share

## Glossary Review

***Book value per share** The equity a common stockholder has in the net assets of the corporation from owning one share of stock. (p. 14-18)

**Cash dividend** A pro rata distribution of cash to stockholders. (p. 14-3).

**Cumulative dividend** A feature of preferred stock entitling the stockholder to receive current-year and any unpaid prior-year dividends before common stockholders are paid dividends. (p. 14-5).

**Declaration date** The date the board of directors formally declares (authorizes) a dividend and announces it to stockholders. (p. 14-3).

**Deficit** A debit balance in retained earnings. (p. 14-12).

**Dividend** A corporation's distribution of cash or stock to its stockholders on a pro rata (proportional) basis. (p. 14-2).

**Earnings per share (EPS)** The net income earned by each share of outstanding common stock. (p. 14-16).

**Liquidating dividend** A dividend declared out of paid-in capital. (p. 14-3).

**Payment date** The date dividends are transferred to stockholders. (p. 14-4).

**Payout ratio** The percentage of earnings a company distributes in the form of cash dividends to common stockholders and is computed as cash dividends declared on common stock divided by net income. (p. 14-14).

**Prior period adjustment** The correction of an error in previously issued financial statements. (p. 14-13).

**Record date** The date when ownership of outstanding shares is determined for dividend purposes. (p. 14-4).

**Retained earnings** Net income that a company retains in the business. (p. 14-11).

**Retained earnings restrictions** Circumstances that make a portion of retained earnings currently unavailable for dividends. (p. 14-12).

**Retained earnings statement** A statement that shows the changes in retained earnings during the year. (p. 14-13).

**Return on common stockholders' equity** A measure of profitability that shows how many dollars of net income were earned for each dollar invested by the owners; computed as net income minus preferred dividends divided by average common stockholders' equity. (p. 14-15).

**Stock dividend** A pro rata distribution to stockholders of the corporation's own stock. (p. 14-7).

**Stockholders' equity statement** A statement that shows the changes in each stockholders' equity account and in total stockholders' equity during the year. (p. 14-14).

**Stock split** The issuance of additional shares of stock to stockholders according to their percentage ownership. It is accompanied by a reduction in the par or stated value per share. (p. 14-9).

## Practice Multiple-Choice Questions

**1. (LO 1)** Entries for cash dividends are required on the:

- **a.** declaration date and the payment date.
- **b.** record date and the payment date.
- **c.** declaration date, record date, and payment date.
- **d.** declaration date and the record date.

**2. (LO 1)** Preferred stock may have priority over common stock **except** in:

- **a.** dividends.
- **b.** assets in the event of liquidation.
- **c.** cumulative dividend features.
- **d.** voting.

**3. (LO 1)** Encore Inc. declared an $80,000 cash dividend. It currently has 3,000 shares of 7%, $100 par value cumulative preferred stock outstanding. It is one year in arrears on its preferred stock. How much cash will Encore distribute to the common stockholders?

- **a.** $38,000.
- **b.** $42,000.
- **c.** $59,000.
- **d.** None.

**4. (LO 1)** Which of the following statements about small stock dividends is **true**?

- **a.** A debit to Retained Earnings should be made for the par value of the shares issued.
- **b.** A small stock dividend decreases total stockholders' equity.
- **c.** Market price per share should be assigned to the dividend shares.
- **d.** A small stock dividend ordinarily will have an effect on par value per share of stock.

**5. (LO 1)** Which of the following statements about a 3-for-1 stock split is **true**?

- **a.** It will triple the market price of the stock.
- **b.** It will triple the amount of total stockholders' equity.
- **c.** It will have no effect on total stockholders' equity.
- **d.** It requires the company to distribute cash.

**6. (LO 1)** Raptor Inc. has retained earnings of $500,000 and total stockholders' equity of $2,000,000. It has 100,000 shares of $8 par

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value common stock outstanding, which is currently selling for $30 per share. If Raptor declares a 10% stock dividend on its common stock:

**a.** net income will decrease by $80,000.

**b.** retained earnings will decrease by $80,000 and total stockholders' equity will increase by $80,000.

**c.** retained earnings will decrease by $300,000 and total stockholders' equity will increase by $300,000.

**d.** retained earnings will decrease by $300,000 and total paid-in capital will increase by $300,000.

**7. (LO 2)** Which of the following can cause a restriction in retained earnings?

**a.** State laws regarding treasury stock.

**b.** Long-term debt contract terms.

**c.** Authorizations by the board of directors in light of planned expansion of corporate facilities.

**d.** All of these answer choices are correct.

**8. (LO 2)** In the stockholders' equity section, Common Stock Dividends Distributable is reported as a(n):

**a.** deduction from total paid-in capital and retained earnings.

**b.** addition to additional paid-in capital.

**c.** deduction from retained earnings.

**d.** addition to capital stock.

**9. (LO 2)** The return on common stockholders' equity is defined as:

**a.** net income divided by total assets.

**b.** cash dividends divided by average common stockholders' equity.

**c.** income available to common stockholders divided by average common stockholders' equity.

**d.** None of these is correct.

**10. (LO 2)** Orlando Company has a beginning balance in retained earnings of $100,000. During the year, it had a net loss of $20,000, paid cash dividends of $3,000, and issued a small stock dividend that had a market value of $7,000 and a par value of $1,000. The ending balance in retained earnings is:

**a.** $120,000. **c.** $79,000.

**b.** $80,000. **d.** $70,000.

**11. (LO 2)** Katie Inc. reported net income of $186,000 during 2020 and paid dividends of $26,000 on common stock. It also has 10,000 shares of 6%, $100 par value, noncumulative preferred stock outstanding and paid dividends of $60,000 on preferred stock. Common stockholders' equity was $1,200,000 on January 1, 2020, and $1,600,000 on December 31, 2020. The company's return on common stockholders' equity for 2020 is:

**a.** 10.0%. **c.** 7.1%.

**b.** 9.0%. **d.** 13.3%.

**12. (LO 3)** During 2020, Talon Inc. had sales revenue $376,000, gross profit $176,000, operating expenses $66,000, cash dividends $30,000, other expenses and losses $20,000. Its corporate tax rate is 30%. What was Talon's income tax expense for the year?

**a.** $18,000. **c.** $112,800.

**b.** $52,800. **d.** $27,000.

**13. (LO 3)** Corporation income statements may be the same as the income statements for unincorporated companies **except** for:

**a.** gross profit. **c.** operating income.

**b.** income tax expense. **d.** net sales.

**14. (LO 3)** If everything else is held constant, earnings per share is increased by:

**a.** the payment of a cash dividend to common shareholders.

**b.** the payment of a cash dividend to preferred shareholders.

**c.** the issuance of new shares of common stock.

**d.** the purchase of treasury stock.

**15. (LO 3)** The income statement for Nadeen, Inc. shows income before income taxes $700,000, income tax expense $210,000, and net income $490,000. If Nadeen has 100,000 shares of common stock outstanding throughout the year, earnings per share is:

**a.** $7.00. **c.** $2.10.

**b.** $4.90. **d.** No correct answer is given.

## Solutions

**1. a.** Entries are required for dividends on the declaration date and the payment date, but not the record date. The other choices are therefore incorrect.

**2. d.** Preferred stock usually does not have voting rights and therefore does not have priority over common stock on this issue. The other choices are true statements.

**3. a.** The preferred stockholders will receive a total of $42,000 in dividends (3,000 × .07 × $100 × 2 years). The common stockholders will receive $38,000 ($80,000 − $42,000), not (b) $42,000, (c) $59,000, or (d) none.

**4. c.** Because the stock dividend is considered small, the fair value (market price), not the par value, is assigned to the shares. The other choices are incorrect because (a) a debit to Retained Earnings for the fair value of the shares issued should be made; (b) a small stock dividend changes the composition of total stockholders' equity, but does not change the total; and (d) a small stock dividend will have no effect on par value per share.

**5. c.** Stock splits have no effect on total paid-in capital, retained earnings, or total stockholders' equity. The other choices are incorrect because (a) stock splits reduce the market price per share of stock, (b) stock splits have no effect on total stockholders' equity, and (d) the company will distribute additional shares of stock, not cash.

**6. d.** Retained earnings will decrease by $300,000 and total paid-in capital will increase by $300,000. The other choices are therefore incorrect because (a) net income is not affected, (b) retained earnings decreases by $300,000, and (c) total stockholders' equity does not change.

**7. d.** All of the answer choices are correct. Although choices (a), (b), and (c) are true statements, choice (d) is the better answer.

**8. d.** Common Stock Dividends Distributable is reported as an addition to capital stock, not (a) as a deduction from total paid-in capital and retained earnings, (b) as an addition to additional paid-in capital, or (c) as a deduction from retained earnings.

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**9. c.** Return on common stockholders' equity equals Net income less Preferred dividends (income available to common stockholders) divided by Average common stockholders' equity. The other choices are therefore incorrect.

**10. d.** The ending balance in retained earnings is $70,000. It is computed by subtracting from the beginning balance of $100,000 the following items: net loss of $20,000, cash dividends of $3,000, and stock dividends of $7,000. Note that market value of the cash dividend should be used instead of its par value. The other choices are therefore incorrect.

**11. b.** Return on common stockholders' equity is Net income available to common stockholders divided by Average common stockholders' equity. Net income available to common stockholders is Net income less Preferred dividends = $126,000 [$186,000 − (10,000 × .06 × $100)]. The company's return on common stockholders' equity for the year is therefore 9.0% [$126,000/ ($1,200,000 + $l,600,000)/2)], not (a) 10.0%, (c) 7.1%, or (d) 13.3%.

**12. d.** Income before income taxes = Gross profit ($176,000) − Operating expenses ($66,000) − Other expenses and losses ($20,000) = $90,000. Talon's income tax expense therefore = $27,000 ($90,000 × .30), not (a) $18,000, (b) $52,800, or (c) $112,800.

**13. b.** Corporation income statements report income tax expense but income statements for unincorporated firms do not. The other choices are true statements.

**14. d.** Earnings per share is increased by the purchase of treasury stock because the denominator (the weighted-average common shares outstanding) would decrease with this transaction. The other choices are incorrect because (a) earnings per share is unchanged by the payment of a cash dividend to common shareholders; (b) earnings per share is decreased, not increased, by the payment of a cash dividend to preferred shareholders; and (c) earnings per share is decreased by the issuance of new shares of common stock.

**15. b.** Earnings per share equals Net income ($700,000 − $210,000) less Preferred dividends ($0) divided by Weighted-average common shares outstanding (100,000) = $4.90 per share. The other choices are therefore incorrect.

## Practice Brief Exercises

**1. (LO 1)** Giovanni Corporation has 70,000 shares of common stock outstanding. It declares a $2 per share cash dividend on November 15 to stockholders of record on December 15. The dividend is paid on December 31. Prepare the entries on the appropriate dates to record the declaration and payment of the cash dividend.

*Prepare entries for a cash dividend.*

### Solution

| | | | | |
|---|---|---|---|---|
| **1.** Nov. 15 | Cash Dividends (70,000 × $2/share) | | 140,000 | |
| | Dividends Payable | | | 140,000 |
| Dec. 31 | Dividends Payable | | 140,000 | |
| | Cash | | | 140,000 |

**2. (LO 1)** The stockholders' equity section of Ynoa Corporation consists of common stock ($5 par) $3,000,000 and retained earnings $1,000,000. A 15% stock dividend (90,000 shares) is declared when the market price per share is $11. Show the before-and-after effects of the dividend on (a) the components of stockholders' equity, (b) shares outstanding, and (c) par value per share.

*Show before-and-after effects of a stock dividend.*

### Solution

| | Before Dividend | After Dividend |
|---|---|---|
| **2. a.** Stockholders' equity | | |
| Paid-in capital | | |
| Common stock, $5 par | $3,000,000 | $3,450,000 |
| In excess of par | — | 540,000 |
| Total paid-in capital | 3,000,000 | 3,990,000 |
| Retained earnings | 1,000,000 | 10,000 |
| Total stockholders' equity | $4,000,000 | $4,000,000 |
| **b.** Outstanding shares | 600,000 | 690,000 |
| **c.** Par value per share | $5.00 | $5.00 |

**3. (LO 2)** The balance in retained earnings on January 1, 2020, for ChrisBeck Inc. was $400,000. During the year, the corporation paid cash dividends of $50,000 and distributed a stock dividend of $10,000. In addition, the company determined that it had overstated its repairs expense in prior years by $35,000. Net income for 2020 was $72,000. Determine the retained earnings balance for 2020.

*Determine retained earnings balance.*

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### Solution

| | | |
|---|---|---|
| 3. Balance, January 1, as reported | | $400,000 |
| Correction for understatement of net income in prior period (repairs expense error) | | 35,000 |
| Balance, January 1, as adjusted | | 435,000 |
| Add: Net income | | 72,000 |
| | | 507,000 |
| Less: Cash dividends | $50,000 | |
| Stock dividends | 10,000 | 60,000 |
| Balance, December 31 | | $447,000 |

## Practice Exercises

*Allocate cash dividends to preferred and common stock.*

**1. (LO 1)** At December 31, 2020, Lebron Company distributes $50,000 of cash dividends. Its outstanding common stock has a par value of $400,000, and its 6% preferred stock has a par value of $100,000 at December 31, 2020.

**Instructions**

**a.** Show the allocation of dividends to each class of stock, assuming that the preferred stock dividend is 6% and not cumulative.

**b.** Show the allocation of the dividends to each class of stock, assuming the preferred stock dividend of 6% is cumulative and Lebron Company did not pay any dividends on the preferred stock in the preceding 2 years.

**c.** Journalize the declaration of the cash dividend at December 31, 2020, assuming the requirements in part (b).

### Solution

**1. a.**

| | 2020 |
|---|---|
| Total dividend declaration | $50,000 |
| Allocation to preferred stock (6% × $100,000) | (6,000) |
| Remainder to common stock | $44,000 |

**b.**

| | 2020 |
|---|---|
| Total dividend declaration | $50,000 |
| Allocation to preferred stock (6% × $100,000 × 3) | (18,000) |
| Remainder to common stock | $32,000 |

**c.**

| | | | |
|---|---|---|---|
| Dec. 31 | Cash Dividends | 50,000 | |
| | Dividends Payable | | 50,000 |

*Journalize cash dividends; indicate statement presentation.*

**2. (LO 1, 2)** **Financial Statement** On January 1, Michelle Corporation had 95,000 shares of no-par common stock issued and outstanding. The stock has a stated value of $5 per share. During the year, the following occurred.

| | |
|---|---|
| Apr. 1 | Issued 55,000 additional shares of common stock for $17 per share. |
| June 15 | Declared a cash dividend of $1 per share to stockholders of record on June 30. |
| July 10 | Paid the $1 cash dividend. |
| Dec. 1 | Issued 2,000 additional shares of common stock for $19 per share. |
| 15 | Declared a cash dividend on outstanding shares of $1.20 per share to stockholders of record on December 31. |

**Instructions**

**a.** Prepare the entries, if any, on each of the three dividend dates.

**b.** How are dividends and dividends payable reported in the financial statements prepared at December 31?

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### Solution

| | | | | | |
|---|---|---|---|---|---|
| **2. a.** | June 15 | Cash Dividends (150,000 × $1) | 150,000 | |
| | | Dividends Payable | | 150,000 |
| | July 10 | Dividends Payable | 150,000 | |
| | | Cash | | 150,000 |
| | Dec. 15 | Cash Dividends (152,000 × $1.20) | 182,400 | |
| | | Dividends Payable | | 182,400 |

**b.** In the retained earnings statement, dividends of $332,400 will be deducted. In the balance sheet, Dividends Payable of $182,400 will be reported as a current liability.

## Practice Problem

*Prepare dividend entries and stockholders' equity section.*

**(LO 1, 2)** **Financial Statement** On January 1, 2020, Hayslett Corporation had the following stockholders' equity accounts.

| | |
|---|---|
| Common Stock ($10 par value, 260,000 shares issued and outstanding) | $2,600,000 |
| Paid-in Capital in Excess of Par—Common Stock | 1,500,000 |
| Retained Earnings | 3,200,000 |

During the year, the following transactions occurred.

| | | |
|---|---|---|
| April | 1 | Declared a $1.50 cash dividend per share to stockholders of record on April 15, payable May 1. |
| May | 1 | Paid the dividend declared in April. |
| June | 1 | Announced a 2-for-1 stock split. Prior to the split, the market price per share was $24. |
| Aug. | 1 | Declared a 10% stock dividend to stockholders of record on August 15, distributable August 31. On August 1, the market price of the stock was $10 per share. |
| | 31 | Issued the shares for the stock dividend. |
| Dec. | 1 | Declared a $1.50 per share dividend to stockholders of record on December 15, payable January 5, 2021. |
| | 31 | Determined that net income for the year was $600,000. |

### Instructions

**a.** Journalize the transactions and the closing entries for net income, stock dividends, and cash dividends.

**b.** Prepare a stockholders' equity section at December 31. Assume accumulated other comprehensive income of $105,000.

### Solution

| | | | | | |
|---|---|---|---|---|---|
| **a.** | Apr. | 1 | Cash Dividends (260,000 × $1.50) | 390,000 | |
| | | | Dividends Payable | | 390,000 |
| | May | 1 | Dividends Payable | 390,000 | |
| | | | Cash | | 390,000 |
| | June | 1 | No journal entry needed for stock split | | |
| | Aug. | 1 | Stock Dividends (52,000* × $10) | 520,000 | |
| | | | Common Stock Dividends Distributable (52,000 × $5) | | 260,000 |
| | | | Paid-in Capital in Excess of Par—Common Stock (52,000 × $5) | | 260,000 |
| | | | *520,000 × .10 | | |
| | | 31 | Common Stock Dividends Distributable | 260,000 | |
| | | | Common Stock | | 260,000 |
| | Dec. | 1 | Cash Dividends (572,000** × $1.50) | 858,000 | |
| | | | Dividends Payable | | 858,000 |
| | | | **(260,000 × 2) + 52,000 | | |
| | | 31 | Income Summary | 600,000 | |
| | | | Retained Earnings | | 600,000 |
| | | 31 | Retained Earnings | 1,768,000 | |
| | | | Stock Dividends | | 520,000 |
| | | | Cash Dividends ($390,000 + $858,000) | | 1,248,000 |

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**b.**

| Hayslett Corporation<br>Balance Sheet (Partial) | |
|---|---|
| Stockholders' equity | |
| Paid-in capital | |
| Capital stock | |
| Common stock, $5 par value, 572,000 shares issued and outstanding | $2,860,000 |
| In excess of par—common stock | 1,760,000 |
| Total paid-in capital | 4,620,000 |
| Retained earnings | 2,032,000* |
| Total paid-in capital and retained earnings | 6,652,000 |
| Accumulated other comprehensive income | 105,000 |
| Total stockholders' equity | $6,757,000 |

*$3,200,000 + $600,000 − $390,000 − $520,000 − $858,000

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendices to the chapter.

## Questions

1. **a.** What is a dividend?
   **b.** "Dividends must be paid in cash." Do you agree? Explain.
2. Jan Kimler maintains that adequate cash is the only requirement for the declaration of a cash dividend. Is Jan correct? Explain.
3. **a.** Three dates are important in connection with cash dividends. Identify these dates, and explain their significance to the corporation and its stockholders.
   **b.** Identify the accounting entries that are made for a cash dividend and the date of each entry.
4. Farley Inc. declares a $55,000 cash dividend on December 31, 2020. The required annual dividend on preferred stock is $10,000. Determine the allocation of the dividend to preferred and common stockholders assuming the preferred stock is cumulative and dividends are 1 year in arrears.
5. Contrast the effects of a cash dividend and a stock dividend on a corporation's balance sheet.
6. Rich Mordica asks, "Since stock dividends don't change anything, why declare them?" What is your answer to Rich?
7. Gorton Corporation has 30,000 shares of $10 par value common stock outstanding when it announces a 2-for-1 stock split. Before the split, the stock had a market price of $120 per share. After the split, how many shares of stock will be outstanding? What will be the approximate market price per share?
8. The board of directors is considering either a stock split or a stock dividend. They understand that total stockholders' equity will remain the same under either action. However, they are not sure of the different effects of the two types of actions on other aspects of stockholders' equity. Explain the differences to the directors.
9. What is the purpose of a retained earnings restriction? Identify the possible causes of retained earnings restrictions.
10. How are retained earnings restrictions generally reported in the financial statements?
11. Rafy Furcal believes that both the beginning and ending balances in retained earnings are shown in the stockholders' equity section. Is Rafy correct? Discuss.
12. What is the formula for the payout ratio? What does it indicate?
13. Dean Percival, who owns many investments in common stock, says, "I don't care what a company's net income is. The stock price tells me everything I need to know!" How do you respond to Dean?
14. What is the unique feature of a corporation income statement? Illustrate this feature, using assumed data.
15. Why must preferred stock dividends be subtracted from net income in computing earnings per share?
16. What were the amounts of basic earnings per share of common stock that **Apple** reported in the years 2014 to 2015?
*17. What is the formula for computing book value per share when a corporation has only outstanding common stock?
*18. Emko Inc.'s common stock has a par value of $1, a book value of $24, and a current market price of $18. Explain why these amounts are all different.

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## Brief Exercises

**BE14.1** (LO 1) Greenwood Corporation has 80,000 shares of common stock outstanding. It declares a $1 per share cash dividend on November 1 to stockholders of record on December 1. The dividend is paid on December 31. Prepare the entries on the appropriate dates to record the declaration and payment of the cash dividend.

*Prepare entries for a cash dividend.*

**BE14.2** (LO 1) M. Bot Corporation has 10,000 shares of 8%, $100 par value, cumulative preferred stock outstanding at December 31, 2020. No dividends were declared in 2018 or 2019. If M. Bot wants to pay $375,000 of dividends in 2020, what amount of dividends will common stockholders receive?

*Determine dividends paid to common stockholders.*

**BE14.3** (LO 1) Langley Corporation has 50,000 shares of $10 par value common stock outstanding. It declares a 15% stock dividend on December 1 when the market price per share is $16. The dividend shares are issued on December 31. Prepare the entries for the declaration and issuance of the stock dividend.

*Prepare entries for a stock dividend.*

**BE14.4** (LO 1) The stockholders' equity section of Pretzer Corporation consists of common stock ($10 par) $2,000,000 and retained earnings $500,000. A 10% stock dividend (20,000 shares) is declared when the market price per share is $14. Show the before-and-after effects of the dividend on the following.

*Show before-and-after effects of a stock dividend.*

**a.** The components of stockholders' equity.

**b.** Shares outstanding.

**c.** Par value per share.

**BE14.5** (LO 2) For the year ending December 31, 2020, Soto Inc. reports net income $170,000 and cash dividends $85,000. Determine the balance in retained earnings at December 31, assuming the balance in retained earnings on January 1, 2020, was $220,000.

*Determine retained earnings balance.*

**BE14.6** (LO 2) **SUPERVALU**, one of the largest grocery retailers in the United States, is headquartered in Minneapolis. Suppose the following financial information (in millions) was taken from the company's 2020 annual report: net sales $40,597, net income $393, beginning common stockholders' equity $2,581, and ending common stockholders' equity $2,887. Compute the return on common stockholders' equity.

*Calculate the return on common stockholders' equity.*

**BE14.7** (LO 3) **Financial Statement** The following information is available for Reinsch Corporation for the year ended December 31, 2020: cost of goods sold $205,000, sales revenue $350,000, other revenues and gains $50,000, and operating expenses $75,000. Assuming a corporate tax rate of 30%, prepare an income statement for the company.

*Prepare a corporate income statement.*

**BE14.8** (LO 3) Ziegler Corporation reports net income of $380,000 and a weighted-average of 200,000 shares of common stock outstanding for the year. Compute the earnings per share of common stock.

*Compute earnings per share.*

**BE14.9** (LO 3) Income and common stock data for Ziegler Corporation are presented in BE14.8. Assume also that Ziegler has cumulative preferred stock dividends for the current year of $30,000 that were declared and paid. Compute the earnings per share of common stock.

*Compute earnings per share with cumulative preferred stock.*

***BE14.10** (LO 5) The balance sheet for Lauren Inc. shows the following: total paid-in capital and retained earnings $877,000, total stockholders' equity $817,000, common stock issued 44,000 shares, and common stock outstanding 38,000 shares. Compute the book value per share. (No preferred stock is outstanding.)

*Compute book value per share.*

## DO IT! Exercises

**DO IT! 14.1a** (LO 1) Herr Corporation has 3,000 shares of 7%, $100 par value preferred stock outstanding at December 31, 2020. At December 31, 2020, the company declared a $105,000 cash dividend. Determine the dividend paid to preferred stockholders and common stockholders under each of the following scenarios.

*Determine dividends paid to preferred and common stockholders.*

**1.** The preferred stock is noncumulative, and the company has not missed any dividends in previous years.

**2.** The preferred stock is noncumulative, and the company did not pay a dividend in each of the two previous years.

**3.** The preferred stock is cumulative, and the company did not pay a dividend in each of the two previous years.

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*Determine effects of stock dividend and stock split.*

**DO IT! 14.1b (LO 1)** Jurgens Company has had 4 years of net income. Due to this success, the market price of its 400,000 shares of $3 par value common stock has increased from $12 per share to $46. During this period, paid-in capital remained the same at $2,800,000. Retained earnings increased from $1,800,000 to $12,000,000. President E. Rife is considering either a 15% stock dividend or a 2-for-1 stock split. He asks you to show the before-and-after effects of each option on (a) retained earnings and (b) total stockholders' equity.

*Compute return on stockholders' equity and discuss changes.*

**DO IT! 14.2 (LO 2)** On January 1, 2020, Vahsholtz Corporation purchased 5,000 shares of treasury stock. Other information regarding Vahsholtz Corporation is provided as follows.

| | 2019 | 2020 |
|---|---|---|
| Net income | $100,000 | $110,000 |
| Dividends on preferred stock | 30,000 | 30,000 |
| Dividends on common stock | 20,000 | 18,000 |
| Common stockholders' equity beginning of year | 600,000 | 750,000 |
| Common stockholders' equity end of year | 750,000 | 830,000 |

(a) Compute return on common stockholders' equity for each year, and (b) discuss its change from 2019 to 2020.

*Compute EPS and analyze changes.*

**DO IT! 14.3 (LO 3)** On January 1, 2020, Vahsholtz Corporation purchased 5,000 shares of treasury stock. Other information regarding Vahsholtz Corporation is provided as follows.

| | 2019 | 2020 |
|---|---|---|
| Net income | $100,000 | $110,000 |
| Dividends on preferred stock | $30,000 | $30,000 |
| Dividends on common stock | $20,000 | $25,000 |
| Weighted-average number of common shares outstanding | 50,000 | 45,000 |
| Common stockholders' equity beginning of year | $600,000 | $750,000 |
| Common stockholders' equity end of year | $750,000 | $830,000 |

(a) Compute earnings per share for each year and (b) discuss its change from 2019 to 2020.

## Exercises

*Journalize cash dividends; indicate statement presentation.*

**E14.1 (LO 1)** **Financial Statement** On January 1, Guillen Corporation had 95,000 shares of no-par common stock issued and outstanding. The stock has a stated value of $5 per share. During the year, the following occurred.

| | | |
|---|---|---|
| Apr. | 1 | Issued 25,000 additional shares of common stock for $17 per share. |
| June | 15 | Declared a cash dividend of $1 per share to stockholders of record on June 30. |
| July | 10 | Paid the $1 cash dividend. |
| Dec. | 1 | Issued 2,000 additional shares of common stock for $19 per share. |
| | 15 | Declared a cash dividend on outstanding shares of $1.20 per share to stockholders of record on December 31. |

### Instructions

**a.** Prepare the entries to record these transactions.

**b.** How are dividends and dividends payable reported in the financial statements prepared at December 31?

*Allocate cash dividends to preferred and common stock.*

**E14.2 (LO 1)** Knudsen Corporation was organized on January 1, 2019. During its first year, the corporation issued 2,000 shares of $50 par value preferred stock and 100,000 shares of $10 par value common stock. At December 31, the company declared the following cash dividends: 2019, $5,000; 2020, $12,000; and 2021, $28,000.

### Instructions

**a.** Show the allocation of dividends to each class of stock, assuming the preferred stock dividend is 6% and noncumulative.

**b.** Show the allocation of dividends to each class of stock, assuming the preferred stock dividend is 7% and cumulative.

**c.** Journalize the declaration of the cash dividend at December 31, 2021, under part (b).

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**E14.3 (LO 1)** On January 1, 2020, Frontier Corporation had $1,000,000 of common stock outstanding that was issued at par. It also had retained earnings of $750,000. The company issued 40,000 shares of common stock at par on July 1 and earned net income of $400,000 for the year.

*Journalize stock dividends.*

### Instructions

Journalize the declaration of a 15% stock dividend on December 10, 2020, for the following independent assumptions.

**a.** Par value is $10, and market price is $18.

**b.** Par value is $5, and market price is $20.

**E14.4 (LO 1)** On October 31, the stockholders' equity section of Heins Company consists of common stock $500,000 and retained earnings $900,000. Heins is considering the following two courses of action: (1) declaring a 5% stock dividend on the 50,000, $10 par value shares outstanding, or (2) effecting a 2-for-1 stock split that will reduce par value to $5 per share. The current market price is $14 per share.

*Compare effects of a stock dividend and a stock split.*

### Instructions

Prepare a tabular summary of the effects of the alternative actions on the components of stockholders' equity, outstanding shares, and par value per share. Use the following column headings: Before Action, After Stock Dividend, and After Stock Split.

**E14.5 (LO 1)** On October 1, Little Bobby Corporation's stockholders' equity is as follows.

*Indicate account balances after a stock dividend.*

| | |
|---|---|
| Common stock, $5 par value | $400,000 |
| Paid-in capital in excess of par—common stock | 25,000 |
| Retained earnings | 155,000 |
| Total stockholders' equity | $580,000 |

On October 1, Little Bobby declares and distributes a 10% stock dividend when the market price of the stock is $15 per share.

### Instructions

**a.** Compute the par value per share (1) before the stock dividend and (2) after the stock dividend.

**b.** Indicate the balances in the three stockholders' equity accounts after the stock dividend shares have been distributed.

**E14.6 (LO 1, 2)** During 2020, Roblez Corporation had the following transactions and events.

*Indicate the effects on stockholders' equity components.*

1. Declared a cash dividend.
2. Issued par value common stock for cash at par value.
3. Completed a 2-for-1 stock split in which $10 par value stock was changed to $5 par value stock.
4. Declared a small stock dividend when the market price was higher than par value.
5. Made a prior period adjustment for overstatement of net income.
6. Issued the shares of common stock required by the stock dividend declaration in item no. 4 above.
7. Paid the cash dividend in item no. 1 above.
8. Issued par value common stock for cash above par value.

### Instructions

Indicate the effect(s) of each of the foregoing items on the subdivisions of stockholders' equity. Present your answer in tabular form with the following columns. Use (I) for increase, (D) for decrease, and (NE) for no effect. Item no. 1 is given as an example.

| | Paid-in Capital | | |
|---|---|---|---|
| Item | Capital Stock | Additional | Retained Earnings |
| 1 | NE | NE | D |

**E14.7 (LO 1)** Before preparing financial statements for the current year, the chief accountant for Toso Company discovered the following errors in the accounts.

*Prepare correcting entries for dividends and a stock split.*

1. The declaration and payment of $50,000 cash dividend was recorded as a debit to Interest Expense $50,000 and a credit to Cash $50,000.

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2. A 10% stock dividend (1,000 shares) was declared on the $10 par value stock when the market price per share was $18. The only entry made was Stock Dividends (Dr.) $10,000 and Dividend Payable (Cr.) $10,000. The shares have not been issued.
3. A 4-for-1 stock split involving the issue of 400,000 shares of $5 par value common stock for 100,000 shares of $20 par value common stock was recorded as a debit to Retained Earnings $2,000,000 and a credit to Common Stock $2,000,000.

**Instructions**

Prepare the correcting entries at December 31.

*Determine retained earnings balance.*

**E14.8 (LO 2)** On January 1, 2020, Eddy Corporation had retained earnings of $610,000. During the year, Eddy had the following selected transactions.

1. Declared cash dividends $120,000.
2. Corrected overstatement of 2019 net income because of inventory error $40,000.
3. Earned net income $350,000.
4. Declared stock dividends $90,000.

**Instructions**

Determine the retained earnings balance at the end of the year.

*Determine retained earnings balance.*

**E14.9 (LO 2)** Newland Company reported retained earnings at December 31, 2019, of $310,000. Newland had 200,000 shares of common stock outstanding at the beginning of 2020.

The following transactions occurred during 2020.

1. A cash dividend of $0.50 per share was declared and paid.
2. A 5% stock dividend was declared and distributed when the market price per share was $15 per share.
3. Net income was $285,000.

**Instructions**

Compute the ending balance in retained earnings at the end of 2020.

*Calculate ratios to evaluate dividend and earnings performance.*

**E14.10 (LO 2)** **Writing** The following financial information is available for Flintlock Corporation.

| (in millions) | 2020 | 2019 |
|---|---|---|
| Average common stockholders' equity | $2,532 | $2,591 |
| Dividends declared for common stockholders | 298 | 611 |
| Dividends declared for preferred stockholders | 40 | 40 |
| Net income | 504 | 555 |

**Instructions**

Calculate the payout ratio and return on common stockholders' equity for 2020 and 2019. Comment on your findings.

*Calculate ratios to evaluate dividend and earnings performance.*

**E14.11 (LO 2)** **Writing** Suppose the following financial information is available for **Walgreen Company**.

| (in millions) | 2020 | 2019 |
|---|---|---|
| Average common stockholders' equity | $13,622.5 | $11,986.5 |
| Dividends declared for common stockholders | 471 | 394 |
| Dividends declared for preferred stockholders | 0 | 0 |
| Net income | 2,006 | 2,157 |

**Instructions**

Calculate the payout ratio and return on common stockholders' equity for 2020 and 2019. Comment on your findings.

*Prepare an income statement and compute earnings per share.*

**E14.12 (LO 3)** **Financial Statement** The following information is available for Norman Corporation for the year ended December 31, 2020: sales revenue $700,000, other revenues and gains $92,000, operating expenses $110,000, cost of goods sold $465,000, other expenses and losses $32,000, and preferred stock dividends $30,000. The company's tax rate was 30%, and it had 50,000 shares outstanding during the entire year.

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**Instructions**

**a.** Prepare a corporate income statement.

**b.** Calculate earnings per share.

**E14.13 (LO 2, 3)** **Financial Statement** In 2020, Pennington Corporation had net sales of $600,000 and cost of goods sold of $360,000. Operating expenses were $153,000, and interest expense was $7,500. The corporation's tax rate is 30%. The corporation declared preferred dividends of $15,000 in 2020, and its average common stockholders' equity during the year was $200,000.

*Prepare an income statement and compute return on equity.*

**Instructions**

**a.** Prepare an income statement for Pennington Corporation.

**b.** Compute Pennington Corporation's return on common stockholders' equity for 2020.

**E14.14 (LO 3)** Ringgold Corporation has outstanding at December 31, 2020, 50,000 shares of $20 par value, cumulative, 6% preferred stock and 200,000 shares of $5 par value common stock. All shares were outstanding the entire year. During 2020, Ringgold earned total revenues of $2,000,000 and incurred total expenses (except income taxes) of $1,300,000. Ringgold's income tax rate is 30%.

*Compute EPS.*

**Instructions**

Compute Ringgold's 2020 earnings per share.

**E14.15 (LO 2, 3)** The following financial information is available for Plummer Corporation.

*Calculate ratios to evaluate earnings performance.*

| | 2020 | 2019 |
|---|---|---|
| Average common stockholders' equity | $1,200,000 | $900,000 |
| Dividends paid to common stockholders | 50,000 | 30,000 |
| Dividends paid to preferred stockholders | 20,000 | 20,000 |
| Net income | 290,000 | 200,000 |
| Market price of common stock | 20 | 15 |

The weighted-average number of shares of common stock outstanding was 80,000 for 2019 and 100,000 for 2020.

**Instructions**

Calculate earnings per share and return on common stockholders' equity for 2020 and 2019.

**E14.16 (LO 2, 3)** This financial information is available for Klinger Corporation.

*Calculate ratios to evaluate earnings performance.*

| | 2020 | 2019 |
|---|---|---|
| Average common stockholders' equity | $1,800,000 | $1,900,000 |
| Dividends paid to common stockholders | 90,000 | 70,000 |
| Dividends paid to preferred stockholders | 20,000 | 20,000 |
| Net income | 200,000 | 191,000 |
| Market price of common stock | 20 | 25 |

The weighted-average number of shares of common stock outstanding was 180,000 for 2019 and 150,000 for 2020.

**Instructions**

Calculate earnings per share and return on common stockholders' equity for 2020 and 2019.

**E14.17 (LO 3)** At December 31, 2020, Millwood Corporation has 2,000 shares of $100 par value, 8%, preferred stock outstanding and 100,000 shares of $10 par value common stock issued. Millwood's net income for the year is $241,000.

*Compute earnings per share under different assumptions.*

Excel

**Instructions**

Compute the earnings per share of common stock under the following independent situations. (Round to two decimals.)

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**a.** The dividend to preferred stockholders was declared. There has been no change in the number of shares of common stock outstanding during the year.

**b.** The dividend to preferred stockholders was not declared. The preferred stock is cumulative. Millwood held 10,000 shares of common treasury stock throughout the year.

*Prepare a stockholders' equity section.*

***E14.18 (LO 2, 5)** **Financial Statement** A recent stockholders' equity section of **Aluminum Company of America (Alcoa)** showed the following (in alphabetical order): additional paid-in capital $6,101, common stock $925, preferred stock $56, retained earnings $7,428, and treasury stock $2,828. (All dollar data are in millions.)

The preferred stock has 557,740 shares authorized, with a par value of $100 and an annual $3.75 per share cumulative dividend preference. At December 31 of the current year, 557,649 shares of preferred are issued and 546,024 shares are outstanding. There are 1.8 billion shares of $1 par value common stock authorized, of which 924.6 million are issued and 844.8 million are outstanding at December 31.

**Instructions**

**a.** Prepare the stockholders' equity section of the current year, including disclosure of all relevant data.

**b.** Compute the book value per share of common stock, assuming there are no preferred dividends in arrears. (Round to two decimals.)

*Compute book value per share with preferred stock.*

***E14.19 (LO 5)** At December 31, Gorden Corporation has total stockholders' equity of $3,200,000. Included in this total are preferred stock $500,000 and paid-in capital in excess of par—preferred stock $50,000. There are 10,000 shares of $50 par value, 8% cumulative preferred stock outstanding. At year-end, 200,000 shares of common stock are outstanding.

**Instructions**

Compute the book value per share of common stock under each of the following assumptions.

**a.** There are no preferred dividends in arrears, and the preferred stock does not have a call price.

**b.** Preferred dividends are one year in arrears, and the preferred stock has a call price of $60 per share.

## Problems: Set A

*Prepare dividend entries and stockholders' equity section.*

**P14.1A (LO 1, 2)** **Financial Statement** On January 1, 2020, Geffrey Corporation had the following stockholders' equity accounts.

GLS

| | |
|---|---|
| Common Stock ($20 par value, 60,000 shares issued and outstanding) | $1,200,000 |
| Paid-in Capital in Excess of Par—Common Stock | 200,000 |
| Retained Earnings | 600,000 |

During the year, the following transactions occurred.

| | | |
|---|---|---|
| Feb. | 1 | Declared a $1 cash dividend per share to stockholders of record on February 15, payable March 1. |
| Mar. | 1 | Paid the dividend declared in February. |
| Apr. | 1 | Announced a 2-for-1 stock split. Prior to the split, the market price per share was $36. |
| July | 1 | Declared a 10% stock dividend to stockholders of record on July 15, distributable July 31. On July 1, the market price of the stock was $13 per share. |
| | 31 | Issued the shares for the stock dividend. |
| Dec. | 1 | Declared a $0.50 per share dividend to stockholders of record on December 15, payable January 5, 2021. |
| | 31 | Determined that net income for the year was $350,000. |

**Instructions**

**a.** Journalize the transactions and the closing entries for net income and dividends.

**b.** Enter the beginning balances, and post the entries to the stockholders' equity accounts. (*Note:* Open additional stockholders' equity accounts as needed.)

c. Total stockholders' equity $2,224,000

**c.** Prepare a stockholders' equity section at December 31.

*Prepare stockholders' equity section, and compute allocation of dividends and earnings per share.*

**P14.2A (LO 1, 2)** **Financial Statement** The post-closing trial balance of Storey Corporation at December 31, 2020, contains the following stockholders' equity accounts.

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| | |
|---|---|
| Preferred Stock (15,000 shares issued) | $ 750,000 |
| Common Stock (250,000 shares issued) | 2,500,000 |
| Paid-in Capital in Excess of Par—Preferred Stock | 250,000 |
| Paid-in Capital in Excess of Par—Common Stock | 400,000 |
| Common Stock Dividends Distributable | 250,000 |
| Retained Earnings | 1,042,000 |

A review of the accounting records reveals the following.

1. No errors have been made in recording 2020 transactions or in preparing the closing entry for net income.
2. Preferred stock is $50 par, 6%, and cumulative; 15,000 shares have been outstanding since January 1, 2019.
3. Authorized stock is 20,000 shares of preferred, 500,000 shares of common with a $10 par value.
4. The January 1 balance in Retained Earnings was $1,170,000.
5. On July 1, 20,000 shares of common stock were issued for cash at $16 per share.
6. On September 1, the company discovered an understatement error of $90,000 in computing salaries and wages expense in 2019. The net of tax effect of $63,000 was properly debited directly to Retained Earnings.
7. A cash dividend of $250,000 was declared and properly allocated to preferred and common stock on October 1. No dividends were paid to preferred stockholders in 2019.
8. On December 31, a 10% common stock dividend was declared out of retained earnings on common stock when the market price per share was $16.
9. Net income for the year was $585,000.
10. On December 31, 2020, the directors authorized disclosure of a $200,000 restriction of retained earnings for plant expansion. (Use Note X.)

### Instructions

**a.** Reproduce the Retained Earnings account (T-account) for 2020.

**b.** Prepare a stockholders' equity section at December 31, 2020.

**c.** Compute the allocation of the cash dividend to preferred and common stock.

b. Total stockholders' equity $5,192,000

**P14.3A (LO 1, 2)** **Financial Statement** On January 1, 2020, Ven Corporation had the following stockholders' equity accounts.

*Prepare the stockholders' equity section, reflecting dividends and stock split.*

| | |
|---|---|
| Common Stock (no par value, 90,000 shares issued and outstanding) | $1,600,000 |
| Retained Earnings | 500,000 |

During the year, the following transactions occurred.

| | | |
|---|---|---|
| Feb. | 1 | Declared a $1 cash dividend per share to stockholders of record on February 15, payable March 1. |
| Mar. | 1 | Paid the dividend declared in February. |
| Apr. | 1 | Announced a 3-for-1 stock split. Prior to the split, the market price per share was $36. |
| July | 1 | Declared a 5% stock dividend to stockholders of record on July 15, distributable July 31. On July 1, the market price of the stock was $16 per share. |
| | 31 | Issued the shares for the stock dividend. |
| Dec. | 1 | Declared a $0.50 per share dividend to stockholders of record on December 15, payable January 5, 2021. |
| | 31 | Determined that net income for the year was $350,000. |

### Instructions

Prepare the stockholders' equity section of the balance sheet at (a) March 31, (b) June 30, (c) September 30, and (d) December 31, 2020.

d. Total stockholders' equity $2,218,250

*Prepare stockholders' equity statement.*

*P14.4A (LO 4) **Financial Statement** On January 1, 2020, Goodhue Inc. had the following stockholders' equity balances.

| | |
|---|---|
| Common Stock (400,000 shares issued) | $800,000 |
| Paid-in Capital in Excess of Par—Common Stock | 500,000 |
| Common Stock Dividends Distributable | 120,000 |
| Retained Earnings | 600,000 |

During 2020, the following transactions and events occurred.

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1. Issued 60,000 shares of $2 par value common stock as a result of 15% stock dividend declared on December 15, 2021.
2. Issued 30,000 shares of common stock for cash at $4 per share.
3. Purchased 25,000 shares of common stock for the treasury at $5 per share.
4. Declared and paid a cash dividend of $111,000.
5. Sold 8,000 shares of treasury stock for cash at $5 per share.
6. Earned net income of $360,000.

Total stockholders' equity $2,304,000

**Instructions**

Prepare a stockholders' equity statement for the year.

*Prepare stockholders' equity section; compute book value per share.*

***P14.5A (LO 2, 5) Financial Statement** The following stockholders' equity accounts arranged alphabetically are in the ledger of Westin Corporation at December 31, 2020.

| | |
|---|---|
| Common Stock ($10 stated value) | $1,500,000 |
| Paid-in Capital from Treasury Stock | 6,000 |
| Paid-in Capital in Excess of Par—Preferred Stock | 42,400 |
| Paid-in Capital in Excess of Stated Value—Common Stock | 690,000 |
| Preferred Stock (8%, $100 par, noncumulative) | 360,000 |
| Retained Earnings | 776,000 |
| Treasury Stock—Common (7,000 shares) | 92,000 |

a. Total stockholders' equity $3,282,400

**Instructions**

**a.** Prepare a stockholders' equity section at December 31, 2020.

**b.** Compute the book value per share of the common stock, assuming the preferred stock has a call price of $110 per share.

## Continuing Case

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### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 13.)

**CC14** After establishing their company's fiscal year-end to be October 31, Natalie and Curtis began operating Cookie & Coffee Creations Inc. on November 1, 2020. On that date, they issued both preferred and common stock. After the first year of operations, Natalie and Curtis want to prepare financial information for the year.

*Go to* **WileyPLUS** *for complete case details and instructions.*

## Ethics Case

**EC14** Molina Corporation has paid 60 consecutive quarterly cash dividends (15 years). The last 6 months, however, have been a cash drain on the company, as profit margins have been greatly narrowed by increasing competition. With a cash balance sufficient to meet only day-to-day operating needs, the president, Rob Lowery, has decided that a stock dividend instead of a cash dividend should be declared. He tells Molina's financial vice president, Debbie Oler, to issue a press release stating that the company is extending its consecutive dividend record with the issuance of a 5% stock dividend. "Write the press release convincing the stockholders that the stock dividend is just as good as a cash dividend," he orders. "Just watch our stock rise when we announce the stock dividend. It must be a good thing if that happens."

**Instructions**

**a.** Who are the stakeholders in this situation?

**b.** Is there anything unethical about Lowery's intentions or actions?

**c.** What is the effect of a stock dividend on a corporation's stockholders' equity accounts? Which would you rather receive as a stockholder—a cash dividend or a stock dividend? Why?

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## Comprehensive Accounting Cycle Review

**ACR14** Hawkeye Corporation's balance sheet at December 31, 2019, is presented below.

*Journalize transactions and prepare financial statements.*

**Hawkeye Corporation**
**Balance Sheet**
**December 31, 2019**

| | | | |
|---|---|---|---|
| Cash | $ 24,600 | Accounts payable | $ 25,600 |
| Accounts receivable | 45,500 | Common stock ($10 par) | 80,000 |
| Allowance for doubtful accounts | (1,500) | Retained earnings | 127,400 |
| Supplies | 4,400 | | $233,000 |
| Land | 40,000 | | |
| Buildings | 142,000 | | |
| Accumulated depreciation—buildings | (22,000) | | |
| | $233,000 | | |

During 2020, the following transactions occurred.

1. On January 1, 2020, Hawkeye issued 1,200 shares of $40 par, 7% preferred stock for $49,200.
2. On January 1, 2020, Hawkeye also issued 900 shares of the $10 par value common stock for $21,000.
3. Hawkeye performed services for $320,000 on account.
4. On April 1, 2020, Hawkeye collected fees of $36,000 in advance for services to be performed from April 1, 2020, to March 31, 2021.
5. Hawkeye collected $276,000 from customers on account.
6. Hawkeye bought $35,100 of supplies on account.
7. Hawkeye paid $32,200 on accounts payable.
8. Hawkeye reacquired 400 shares of its common stock on June 1, 2020, for $28 per share.
9. Paid other operating expenses of $188,200.
10. On December 31, 2020, Hawkeye declared the annual preferred stock dividend and a $1.20 per share dividend on the outstanding common stock, all payable on January 15, 2021.
11. An account receivable of $1,700 which originated in 2019 is written off as uncollectible.

Adjustment data:

1. A count of supplies indicates that $5,900 of supplies remain unused at year-end.
2. Recorded revenue from item 4 above.
3. The allowance for doubtful accounts should have a balance of $3,500 at year end.
4. Depreciation is recorded on the building on a straight-line basis based on a 30-year life and a salvage value of $10,000.
5. The income tax rate is 30%. (*Hint:* Prepare the income statement up to income before income taxes and multiply by 30% to compute the amount.)

### Instructions

(You may want to set up T-accounts to determine ending balances.)

**a.** Prepare journal entries for the transactions listed above and adjusting entries.

**b.** Prepare an adjusted trial balance at December 31, 2020.

**c.** Prepare an income statement and a retained earnings statement for the year ending December 31, 2020, and a classified balance sheet as of December 31, 2020.

b. Totals $740,690

c. Net income $81,970
Tot. assets $421,000

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## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT14.1** The financial statements of **Apple Inc.** are presented in Appendix A. The complete annual report, including the notes to the financial statements, is available at the company's website.

#### Instructions

Refer to Apple's financial statements and answer the following question.
What amount, if any, did Apple declare in dividends on common stock in the year ended September 26, 2015?

### Comparative Analysis Problem:

### PepsiCo, Inc. vs. The Coca-Cola Company

**CT14.2** **PepsiCo**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

#### Instructions

**a.** Compute earnings per share and return on common stockholders' equity for both companies for 2015. Assume PepsiCo's weighted-average shares were 1,469 million and Coca-Cola's weighted-average shares were 4,352 million. Can these measures be used to compare the profitability of the two companies? Why or why not?

**b.** What was the total amount of dividends paid by each company in 2015?

### Comparative Analysis Problem:

### Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT14.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

#### Instructions

**a.** What are the basic earnings per share for both Amazon and Wal-Mart as of December 31, 2015, and January 31, 2016, respectively?

**b.** What was the total amount of dividends, if any, paid by Amazon for the year ending December 31, 2015? What was the total dividends paid by Wal-Mart for the year ending January 31, 2016?

### Real-World Focus

**CT14.4** Use the stockholders' equity section of an annual report and identify the major components.

#### Instructions

Go to the Annual Reports website, select a company of your choice, and then answer the following questions.

**a.** What is the company's name?

**b.** What classes of capital stock has the company issued?

**c.** Compute the following for the two years shown:

**1.** Payout ratio.

**2.** Return on common stockholders' equity.

**d.** Discuss the changes in each ratio.

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## Decision-Making Across the Organization

**CT14.5** The stockholders' equity accounts of Gonzalez, Inc., at January 1, 2020, are as follows.

| | |
|---|---|
| Preferred Stock, no par, 4,000 shares issued | $400,000 |
| Common Stock, no par, 140,000 shares issued | 700,000 |
| Retained Earnings | 550,000 |

During 2020, the company had the following transactions and events.

| | | |
|---|---|---|
| July | 1 | Declared a $0.50 cash dividend per share on common stock. |
| Aug. | 1 | Discovered a $72,000 overstatement of 2019 depreciation expense. (Ignore income taxes.) |
| Sept. | 1 | Paid the cash dividend declared on July 1. |
| Dec. | 1 | Declared a 10% stock dividend on common stock when the market price of the stock was $12 per share. |
| | 15 | Declared a $6 per share cash dividend on preferred stock, payable January 31, 2021. |
| | 31 | Determined that net income for the year was $320,000. |

### Instructions

With the class divided into groups, answer the following questions.

**a.** Determine the retained earnings balance at December 31, 2020. There are no preferred dividends in arrears.

**b.** Discuss why the overstatement of 2019 depreciation expense is not treated as an adjustment of the current year's income.

**c.** Discuss the reasons why a company might decide to issue a stock dividend rather than a cash dividend.

## Communication Activity

**CT14.6** In the past year, Gosser Corporation declared a 10% stock dividend, and Jenks, Inc. announced a 2-for-1 stock split. Your parents own 100 shares of each company's $50 par value common stock. During a recent phone call, your parents ask you, as an accounting student, to explain the differences between the two events.

### Instructions

Write a letter to your parents that explains the effects of the two events on them as stockholders and the effects of each event on the financial statements of each corporation.

## All About You

**CT14.7** In this textbook, you learned that in response to the Sarbanes-Oxley Act, many companies have implemented formal ethics codes. Many other organizations also have ethics codes.

### Instructions

Obtain the ethics code from an organization that you belong to (e.g., student organization, business school, employer, or a volunteer organization). Evaluate the ethics code based on how clearly it identifies proper and improper behavior. Discuss its strengths, and how it might be improved.

## FASB Codification Activity

**CT14.8** If your school has a subscription to the FASB Codification, log in and prepare responses to the following.

**a.** What is a stock dividend?

**b.** What is a stock split?

**c.** At what percentage point does the issuance of additional shares qualify as a stock dividend, as opposed to a stock split?

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# A Look at IFRS

**LEARNING OBJECTIVE 6**

Compare the accounting for dividends, retained earnings, and income reporting under GAAP and IFRS.

The basic accounting for cash and stock dividends is essentially the same under both GAAP and IFRS although IFRS terminology may differ.

## Key Points

Following are the key similarities and differences between GAAP and IFRS as related to dividends, retained earnings, and income reporting.

### Similarities

- The accounting related to prior period adjustment is essentially the same under IFRS and GAAP.
- The stockholders' equity section is essentially the same under IFRS and GAAP. However, terminology used to describe certain components is often different. These differences are discussed in Chapter 13.
- The income statement using IFRS is called the **statement of comprehensive income**. A statement of comprehensive income is presented in a one- or two-statement format. The single-statement approach includes all items of income and expense, as well as each component of other comprehensive income or loss by its individual characteristic. In the two-statement approach, a traditional income statement is prepared. It is then followed by a statement of comprehensive income, which starts with net income or loss and then adds other comprehensive income or loss items. Regardless of which approach is reported, income tax expense is required to be reported.
- The computations related to earnings per share are essentially the same under IFRS and GAAP.

### Differences

- The term **reserves** is used in IFRS to indicate all non–contributed (non–paid-in) capital. Reserves include retained earnings and other comprehensive income items, such as revaluation surplus and unrealized gains or losses on available-for-sale securities.
- IFRS often uses terms such as **retained profits** or **accumulated profit or loss** to describe retained earnings. The term retained earnings is also often used.
- Equity is given various descriptions under IFRS, such as shareholders' equity, owners' equity, capital and reserves, and shareholders' funds.

## Looking to the Future

The IASB and the FASB are currently working on a project related to financial statement presentation. An important part of this study is to determine whether certain line items, subtotals, and totals should be clearly defined and required to be displayed in the financial statements. For example, it is likely that the statement of stockholders' equity and its presentation will be examined closely.

Both the IASB and FASB are working toward convergence of any remaining differences related to earnings per share computations. This convergence will deal with highly technical changes beyond the scope of this textbook.

# IFRS Practice

## IFRS Self-Test Questions

1. The basic accounting for cash dividends and stock dividends:
   **a.** is different under IFRS versus GAAP.
   **b.** is the same under IFRS and GAAP.
   **c.** differs only for the accounting for cash dividends between GAAP and IFRS.
   **d.** differs only for the accounting for stock dividends between GAAP and IFRS.

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2. Which item is **not** considered part of reserves?
   **a.** Unrealized loss on available-for-sale investments.
   **b.** Revaluation surplus.
   **c.** Retained earnings.
   **d.** Issued shares.
3. Under IFRS, a statement of comprehensive income must include:
   **a.** accounts payable. **c.** income tax expense.
   **b.** retained earnings. **d.** preference stock.
4. Which set of terms can be used to describe total stockholders' equity under IFRS?
   **a.** Shareholders' equity, capital and reserves, other comprehensive income.
   **b.** Capital and reserves, shareholders' equity, shareholders' funds.
   **c.** Capital and reserves, retained earnings, shareholders' equity.
   **d.** All of the answer choices are correct.
5. Earnings per share computations related to IFRS and GAAP:
   **a.** are essentially similar.
   **b.** result in an amount referred to as earnings per share.
   **c.** must deduct preferred (preference) dividends when computing earnings per share.
   **d.** All of the answer choices are correct.

## International Financial Reporting Problem: Louis Vuitton

**IFRS14.1** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

### Instructions

Use the company's annual report to answer the following questions.

**a.** Did the company declare and pay any dividends for the year ended December 31, 2015?
**b.** Compute the company's return on ordinary shareholders' equity for the year ended December 31, 2015.
**c.** What was Louis Vuitton's earnings per share for the year ended December 31, 2015?

### Answers to IFRS Self-Test Questions

**1.** b **2.** d **3.** c **4.** b **5.** d

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# Long-Term Liabilities

## Chapter Preview

As you can see from the following Feature Story, having liabilities can be dangerous in difficult economic times. In this chapter, we will explain the accounting for the major types of long-term liabilities reported on the balance sheet. Long-term liabilities are obligations that are expected to be paid more than one year in the future. These liabilities may be bonds, long-term notes, or lease obligations.

## Feature Story

### And Then There Were Two

Debt can help a company acquire the things it needs to grow, but it is often the very thing that kills a company. A brief history of **Maxwell Car Company** illustrates the role of debt in the U.S. auto industry. In 1920, Maxwell Car Company was on the brink of financial ruin. Because it was unable to pay its bills, its creditors stepped in and took over. They hired a former **General Motors (GM)** executive named Walter Chrysler to reorganize the company. By 1925, he had taken over the company and renamed it **Chrysler**. By 1933, Chrysler was booming, with sales surpassing even those of **Ford**.

But the next few decades saw Chrysler make a series of blunders. By 1980, with its creditors pounding at the gates, Chrysler was again on the brink of financial ruin.

At that point, Chrysler brought in a former Ford executive named Lee Iacocca to save the company. Iacocca argued that the United States could not afford to let Chrysler fail because of the loss of jobs. He convinced the federal government to grant loan guarantees—promises that if Chrysler failed to pay its creditors, the government would pay them. Iacocca then streamlined operations and brought out some profitable products. Chrysler

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repaid all of its government-guaranteed loans by 1983, seven years ahead of the scheduled final payment.

To compete in today's global vehicle market, you must be big—really big. So in 1998, Chrysler merged with German automaker **Daimler-Benz** to form **DaimlerChrysler**. For a time, this left just two U.S.-based auto manufacturers—GM and Ford. But in 2007, DaimlerChrysler sold 81% of Chrysler to **Cerberus**, an investment group, to provide much-needed cash infusions to the automaker. In 2009, Daimler turned over its remaining stake to Cerberus. Three days later, Chrysler filed for bankruptcy. But by 2010, it was beginning to show signs of a turnaround.

The car companies are giants. GM and Ford typically rank among the top five U.S. firms in total assets. But GM and Ford accumulated truckloads of debt on their way to getting big. Although debt made it possible to get so big, the Chrysler story, and GM's bankruptcy, make it clear that debt can also threaten a company's survival.

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Describe the major characteristics of bonds. | • Types of bonds<br>• Issuing procedures<br>• Bond trading<br>• Determining the market price of a bond | **DO IT! 1** Bond Terminology |
| **LO 2** Explain how to account for bond transactions. | • Issuing bonds at face value<br>• Discount or premium on bonds<br>• Issuing bonds at a discount<br>• Issuing bonds at a premium<br>• Redeeming bonds at maturity<br>• Redeeming bonds before maturity | **DO IT! 2a** Bond Issuance<br>**DO IT! 2b** Bond Redemption |
| **LO 3** Explain how to account for long-term notes payable. | • Long-term notes payable<br>• Mortgage notes payable | **DO IT! 3** Long-Term Notes |
| **LO 4** Discuss how long-term liabilities are reported and analyzed. | • Presentation<br>• Use of ratios<br>• Debt and equity financing<br>• Lease liabilities | **DO IT! 4** Lease Liability; Analysis of Long-Term Liabilities |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

# Major Characteristics of Bonds

**LEARNING OBJECTIVE 1**
Describe the major characteristics of bonds.

**Long-term liabilities** are obligations that a company expects to pay more than one year in the future. In this chapter, we explain the accounting for the principal types of obligations reported in the long-term liabilities section of the balance sheet. These obligations often are in the form of bonds or long-term notes.

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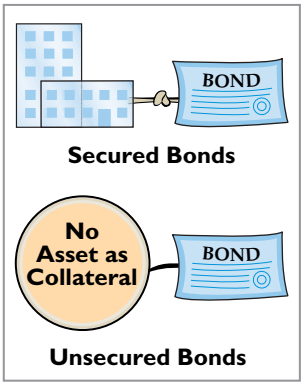
**Bonds** are a form of interest-bearing note payable issued by corporations, universities, and governmental agencies. Bonds, like common stock, are sold in small denominations (usually $1,000 or multiples of $1,000). As a result, bonds attract many investors. When a corporation issues bonds, it is borrowing money. The person who buys the bonds (the bondholder) is lending money.

# Types of Bonds



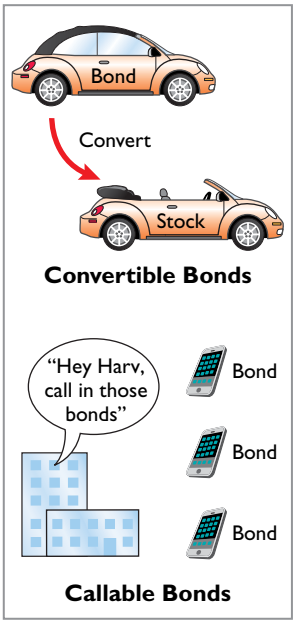

Bonds may have many different features. In the following sections, we describe the types of bonds commonly issued.

## Secured and Unsecured Bonds

**Secured bonds** have specific assets of the issuer pledged as collateral for the bonds. A bond secured by real estate, for example, is called a **mortgage bond**. A bond secured by specific assets set aside to redeem (retire) the bonds is called a **sinking fund bond**.

**Unsecured bonds**, also called **debenture bonds**, are issued against the general credit of the borrower. Companies with good credit ratings use these bonds extensively. For example, at one time **DuPont** reported over $2 billion of debenture bonds outstanding.

## Convertible and Callable Bonds




Bonds that can be converted into common stock at the bondholder's option are **convertible bonds**. Bonds that the issuing company can redeem (buy back) at a stated dollar amount prior to maturity are **callable bonds**. Convertible bonds have features that are attractive both to bondholders and to the issuer. The conversion feature often gives bondholders an opportunity to benefit if the market price of the common stock increases substantially. Furthermore, until conversion, the bondholder receives interest on the bond. For the issuer, the bonds sell at a higher price and pay a lower rate of interest than comparable debt securities that do not have a conversion option. Many corporations, such as **USAir**, **United States Steel Corp.**, and **General Motors Corporation**, have issued convertible bonds.

# Issuing Procedures

State laws grant corporations the power to issue bonds. Both the board of directors and stockholders usually must approve bond issues. **In authorizing the bond issue, the board of directors must stipulate the number of bonds to be authorized, total face value, and contractual interest rate.** The total bond authorization often exceeds the number of bonds the company originally issues. This gives the corporation the flexibility to issue more bonds, if needed, to meet future cash requirements.

The **face value** is the amount of principal due at the maturity date. The **maturity date** is the date that the final payment is due to the investor from the issuing company. The **contractual interest rate**, often referred to as the **stated rate**, is the rate used to determine the amount of cash interest the borrower pays and the investor receives. Usually, the contractual rate is stated as an annual rate.

The terms of the bond issue are set forth in a legal document called a **bond indenture**. The indenture shows the terms and summarizes the rights of the bondholders and their trustees, and the obligations of the issuing company. The **trustee** (usually a financial institution) keeps records of each bondholder, maintains custody of unissued bonds, and holds conditional title to pledged property.

In addition, the issuing company arranges for the printing of **bond certificates**. The indenture and the certificate are separate documents. As shown in **Illustration 15.1**, a bond certificate provides the following information: name of the issuer, face value, contractual interest rate, and maturity date. An investment company that specializes in selling securities generally sells the bonds for the issuing company.

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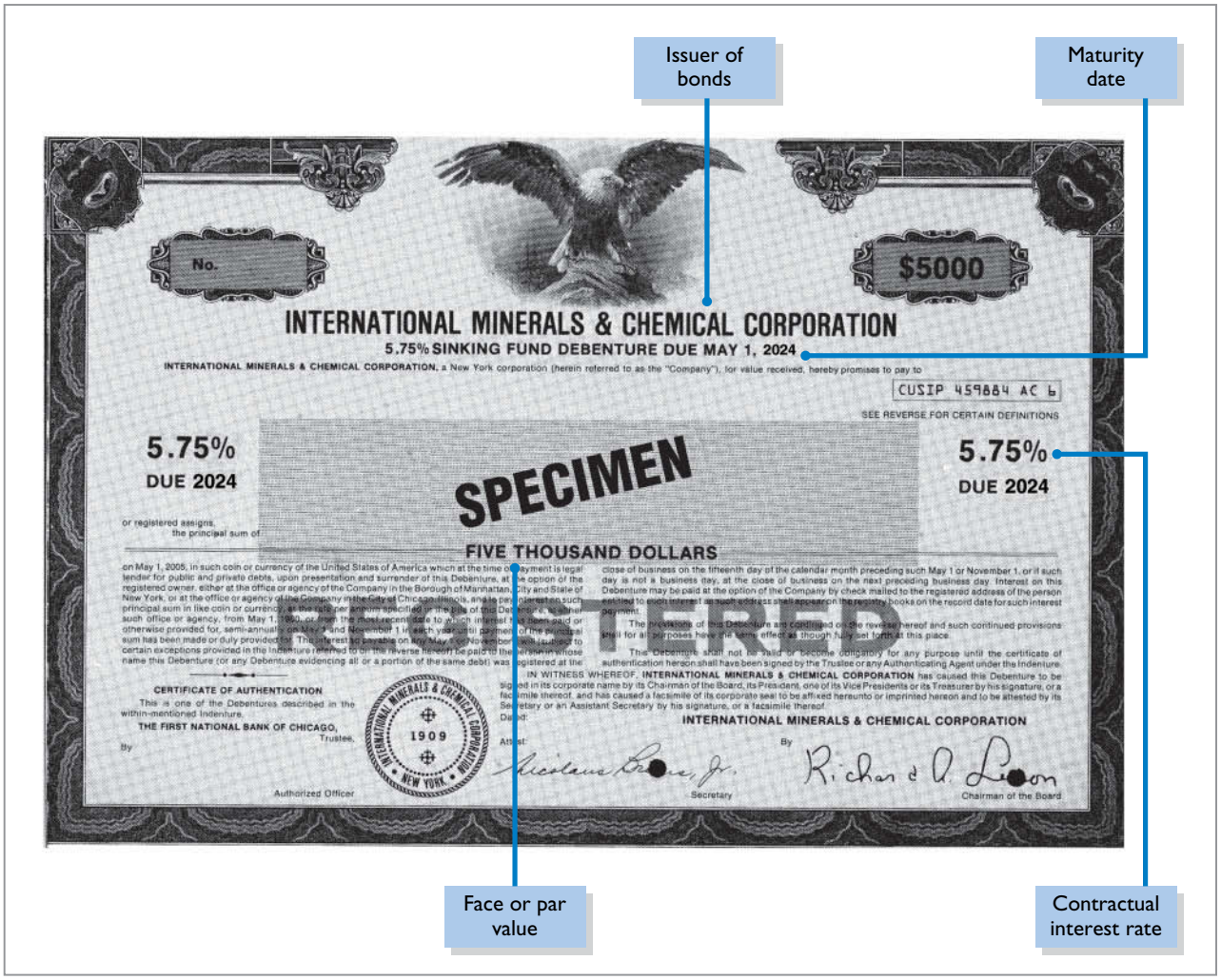
**ILLUSTRATION 15.1** **Bond certificate**




## Bond Trading

Bondholders have the opportunity to convert their holdings into cash at any time by selling the bonds at the current market price on national securities exchanges. **Bond prices are quoted as a percentage of the face value of the bond, which is usually $1,000.** A $1,000 bond with a quoted price of 97 means that the selling price of the bond is 97% of face value, or $970 (see **Helpful Hint**). Newspapers and the financial press publish bond prices and trading activity daily, as shown in **Illustration 15.2**.

**HELPFUL HINT**

**The price of a $1,000 bond trading at 95¼ is $952.50.**

**ILLUSTRATION 15.2**

**Market information for bonds**

| Issuer | Bonds | Maturity | Close | Yield |
|---|---|---|---|---|
| Time Warner Cable | 6.75 | June 15, 2039 | 116.4 | 5.49 |

This bond listing indicates that **Time Warner Cable** has outstanding 6.75%, $1,000 bonds that mature in 2039. They currently yield a 5.49% return. At the close of trading, the price was 116.4% of face value, or $1,164.

A corporation makes journal entries **only when it issues or buys back bonds**, or when bondholders convert bonds into common stock. For example, **DuPont does not journalize** transactions between its bondholders and other investors. If Tom Smith sells his DuPont bonds to Faith Jones, DuPont does not journalize the transaction.

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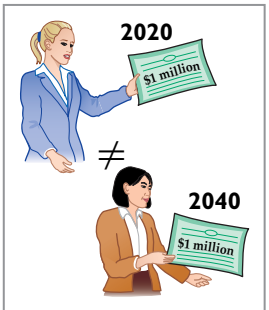
# Determining the Market Price of a Bond

If your company needed financing and wanted to attract investors to purchase your bonds, how would the market set the price for these bonds? To be more specific, assume that Coronet, Inc. issues a **zero-interest bond** (pays no interest) with a face value of $1,000,000 due in 20 years. For this bond, the only cash Coronet pays to bond investors is a million dollars at the end of 20 years. Would investors pay a million dollars for this bond? We hope not because a million dollars received 20 years from now is not the same as a million dollars received today.



Same dollars at different times are not equal.

The term **time value of money** is used to indicate the relationship between time and money—that a dollar received today is worth more than a dollar promised at some time in the future. If you had $1 million today, you would invest it. From that investment, you would earn interest such that at the end of 20 years, you would have much more than $1 million. Thus, if someone is going to pay you $1 million 20 years from now, you would want to find its equivalent today, or its present value. In other words, you would want to determine the value today of the amount to be received in the future after taking into account current interest rates.

The current market price (present value) of a bond is the value at which it should sell in the marketplace. Market price therefore is a function of the three factors that determine present value: (1) the dollar amounts to be received, (2) the length of time until the amounts are received, and (3) the market rate of interest. The **market interest rate** is the rate investors demand for loaning funds.

To illustrate, assume that Acropolis Company on January 1, 2020, issues $100,000 of 9% bonds, due in five years, with interest payable annually at year-end. The purchaser of the bonds would receive the following two types of cash payments: (1) **principal** of $100,000 to be paid at maturity, and (2) five $9,000 **interest payments** ($100,000 × 9%) over the term of the bonds. **Illustration 15.3** shows a time diagram depicting both cash flows.

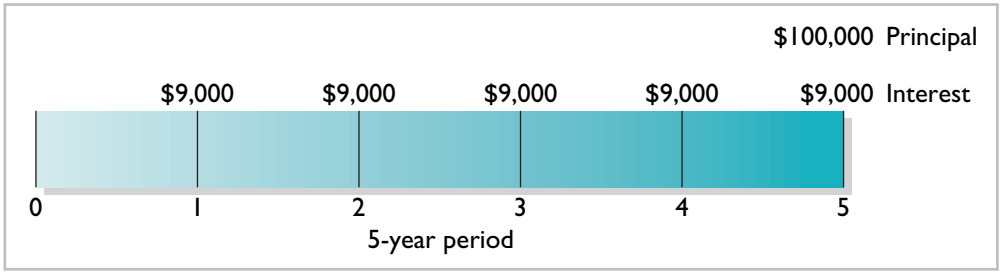



**ILLUSTRATION 15.3**
**Time diagram depicting cash flows**

The current market price of a bond is equal to the present value of all the future cash payments promised by the bond. **Illustration 15.4** lists and totals the present values of these amounts, assuming the market rate of interest is 9%.

| | |
|---|---|
| Present value of $100,000 received in 5 years | $ 64,993 |
| Present value of $9,000 received annually for 5 years | 35,007 |
| **Market price of bonds** | **$100,000** |

**ILLUSTRATION 15.4**
**Computing the market price of bonds**

Tables are available to provide the present value numbers to be used, or these values can be determined mathematically or with financial calculators.[1] Appendix G provides further discussion of the concepts and the mechanics of the time value of money computations.

[1]For those knowledgeable in the use of present value tables, the computations in the example shown in Illustration 15.4 are $100,000 × .64993 = $64,993, and $9,000 × 3.88965 = $35,007 (rounded).

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## Investor Insight

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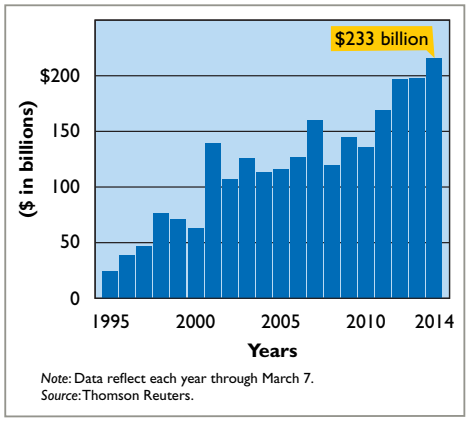
### Running Hot!

Consider these two large deals: **Apple Inc.** sold $17 billion of debt, which at the time was the largest corporate bond ever sold. But shortly thereafter, it was beat by **Verizon Communications Inc.**, which sold $49 billion of debt. The chart highlights the increased issuance of bonds.

As one expert noted about these increases, "Companies are taking advantage of this lower-rate environment in the limited period of time it is going to be around." An interesting aspect of these bond issuances is that companies, like **Philip Morris International**, **Medtronic, Inc.**, and **Simon Properties**, are even selling 30-year bonds. These bond issuers are benefitting from "a massive sentiment shift," says one bond expert. The belief that the economy will recover is making investors more comfortable holding longer-term bonds, as they search for investments that offer better returns than U.S. Treasury bonds.




*Note:* Data reflect each year through March 7.
*Source:* Thomson Reuters.

**Sources:** Vipal Monga, "The Big Number," *Wall Street Journal* (March 20, 2012), p. B5; and Mike Cherney, "Renewed Embrace of Bonds Sparks Boom," *Wall Street Journal* (March 8–9, 2014), p. B5.

**What are the advantages for companies of issuing 30-year bonds instead of 5-year bonds? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 1 | Bond Terminology

State whether each of the following statements is true or false. If false, indicate how to correct the statement.

_____ **1.** Mortgage bonds and sinking fund bonds are both examples of secured bonds.

_____ **2.** Unsecured bonds are also known as debenture bonds.

_____ **3.** The contractual interest rate is the rate investors demand for loaning funds.

_____ **4.** The face value is the amount of principal the issuing company must pay at the maturity date.

_____ **5.** The market price of a bond is equal to its maturity value.

**ACTION PLAN**

- Review the types of bonds and the basic terms associated with bonds.

### Solution

**1.** True. **2.** True. **3.** False. The contractual interest rate is used to determine the amount of cash interest the borrower pays. **4.** True. **5.** False. The market price of a bond is the value at which it should sell in the marketplace. As a result, the market price of the bond and its maturity value are often different.

Related exercise material: **DO IT! 15.1 and E15.1.**

# Accounting for Bond Transactions

**LEARNING OBJECTIVE 2**

Explain how to account for bond transactions.

A corporation records bond transactions when it issues (sells) or redeems (buys back) bonds and when bondholders convert bonds into common stock. If bondholders sell their bond investments to other investors, the issuing firm receives no further money on the transaction,

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**nor does the issuing corporation journalize the transaction** (although it does keep records of the names of bondholders in some cases).

Bonds may be issued at face value, below face value (discount), or above face value (premium). Bond prices for both new issues and existing bonds are quoted as **a percentage of the face value of the bond**. **Face value is usually $1,000.** Thus, a $1,000 bond with a quoted price of 97 means that the selling price of the bond is 97% of face value, or $970.

## Issuing Bonds at Face Value

To illustrate the accounting for bonds issued at face value, assume that on January 1, 2020, Candlestick Inc. issues $100,000, five-year, 10% bonds at 100 (100% of face value). The entry to record the sale is as follows.

| | | | |
|---|---|---|---|
| Jan. 1 | Cash | 100,000 | |
| | Bonds Payable | | 100,000 |
| | (To record sale of bonds at face value) | | |

| A | = | L | + | SE |
|---|---|---|---|---|
| +100,000 | | | | |
| | | +100,000 | | |

**Cash Flows**
+100,000

Candlestick reports bonds payable in the long-term liabilities section of the balance sheet because the maturity date is January 1, 2025 (more than one year away).

Over the term (life) of the bonds, companies make entries to record bond interest. Interest on bonds payable is computed in the same manner as interest on notes payable, as explained in Chapter 11. Assume that interest is payable annually on January 1 on the Candlestick bonds. In that case, Candlestick accrues interest of $10,000 ($100,000 × 10%) on December 31. At December 31, Candlestick recognizes the $10,000 of interest expense incurred with the following adjusting entry.

| | | | |
|---|---|---|---|
| Dec. 31 | Interest Expense | 10,000 | |
| | Interest Payable | | 10,000 |
| | (To accrue bond interest) | | |

| A | = | L | + | SE |
|---|---|---|---|---|
| | | | | −10,000 Exp |
| | | +10,000 | | |

**Cash Flows**
no effect

**The company classifies interest payable as a current liability** because it is scheduled for payment within the next year. When Candlestick pays the interest on January 1, 2021, it debits (decreases) Interest Payable and credits (decreases) Cash for $10,000.

Candlestick records the payment on January 1 as follows.

| | | | |
|---|---|---|---|
| Jan. 1 | Interest Payable | 10,000 | |
| | Cash | | 10,000 |
| | (To record payment of bond interest) | | |

| A | = | L | + | SE |
|---|---|---|---|---|
| | | −10,000 | | |
| −10,000 | | | | |

**Cash Flows**
−10,000

## Discount or Premium on Bonds

The previous example assumed that the contractual (stated) interest rate and the market (effective) interest rate paid on the bonds were the same. Recall that the **contractual interest rate** is the rate applied to the face (par) value to arrive at the interest paid in a year. The **market interest rate** is the rate investors demand for loaning funds to the corporation. When the contractual interest rate and the market interest rate are the same, bonds sell **at face value (par value)**.

However, market interest rates change daily. The type of bond issued, the state of the economy, current industry conditions, and the company's performance all affect market interest rates. As a result, contractual and market interest rates often differ. To make bonds salable when the two rates differ, bonds sell below or above face value.

To illustrate, suppose that a company issues 10% bonds at a time when other bonds of similar risk are paying 12%. Investors will not be interested in buying the 10% bonds, so their value will fall below their face value. When a bond is sold for less than its face value, the difference between the face value of a bond and its selling price is called a **discount**. As a result of the decline in the bonds' selling price, the actual interest rate incurred by the company increases to the level of the current market interest rate.

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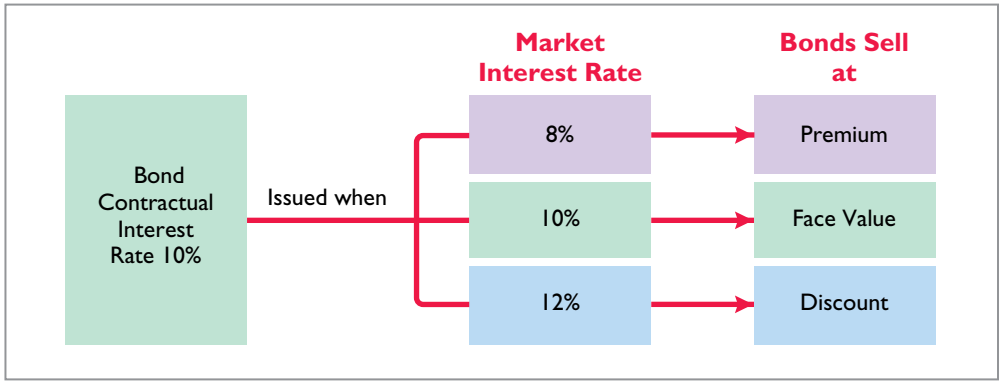
Conversely, if the market rate of interest is **lower than** the contractual interest rate, investors will have to pay more than face value for the bonds. That is, if the market rate of interest is 8% but the contractual interest rate on the bonds is 10%, the price of the bonds will be bid up. When a bond is sold for more than its face value, the difference between the face value and its selling price is called a **premium**. Illustration 15.5 shows these relationships.

**ILLUSTRATION 15.5**
**Interest rates and bond prices**




Issuance of bonds at an amount different from face value is quite common. By the time a company prints the bond certificates and markets the bonds, it will be a coincidence if the market rate and the contractual rate are the same. Thus, the issuance of bonds at a discount does not mean that the issuer's financial strength is suspect. Conversely, the sale of bonds at a premium does not indicate that the financial strength of the issuer is exceptional.

**HELPFUL HINT**

| Discount on Bonds Payable | |
|---|---|
| Increase Debit ↓ Normal Balance | Decrease Credit |

## Issuing Bonds at a Discount

To illustrate issuance of bonds at a discount, assume that on January 1, 2020, Candlestick Inc. sells $100,000, five-year, 10% bonds for $98,000 (98% of face value). Interest is payable annually on January 1. The entry to record the issuance is as follows.

| | | | |
|---|---|---|---|
| Jan. 1 | Cash | 98,000 | |
| | Discount on Bonds Payable | 2,000 | |
| | Bonds Payable | | 100,000 |
| | (To record sale of bonds at a discount) | | |

| A | = | L | + | SE |
|---|---|---|---|---|
| +98,000 | | | | |
| | | −2,000 | | |
| | | +100,000 | | |

**Cash Flows**
+98,000

Although Discount on Bonds Payable has a debit balance, **it is not an asset** (see Helpful Hint). Rather, it is a **contra account**. This account is **deducted from bonds payable** on the balance sheet, as shown in Illustration 15.6.

**ILLUSTRATION 15.6**
**Statement presentation of discount on bonds payable**

**Candlestick Inc.**
**Balance Sheet (partial)**

| | | |
|---|---|---|
| Long-term liabilities | | |
| Bonds payable | $100,000 | |
| **Less: Discount on bonds payable** | 2,000 | $98,000 |

**HELPFUL HINT**
**Carrying value (book value) of bonds issued at a discount is determined by subtracting the balance of the discount account from the balance of the Bonds Payable account.**

The $98,000 represents the **carrying (or book) value** of the bonds (see Helpful Hint). On the date of issue, this amount equals the market price of the bonds.

The issuance of bonds below face value—at a discount—causes the total cost of borrowing to differ from the bond interest paid. That is, the issuing corporation must pay not only the contractual interest rate over the term of the bonds but also the face value (rather than the issuance price) at maturity. Therefore, the difference between the issuance price and face value of the bonds—the discount—is an **additional cost of borrowing**. The company records

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this additional cost as **interest expense** over the life of the bonds. The total cost of borrowing $98,000 for Candlestick is therefore $52,000, computed as shown in Illustration 15.7.

**ILLUSTRATION 15.7**
**Total cost of borrowing—bonds issued at a discount**

| Bonds Issued at a Discount | |
|---|---|
| Annual interest payments ($100,000 × 10% = $10,000; $10,000 × 5) | $50,000 |
| Add: Bond discount ($100,000 − $98,000) | 2,000 |
| **Total cost of borrowing** | **$52,000** |

Alternatively, we can compute the total cost of borrowing as shown in Illustration 15.8.

**ILLUSTRATION 15.8**
**Alternative computation of total cost of borrowing—bonds issued at a discount**

| Bonds Issued at a Discount | |
|---|---|
| Principal at maturity | $100,000 |
| Annual interest payments ($10,000 × 5) | 50,000 |
| Cash to be paid to bondholders | 150,000 |
| Less: Cash received from bondholders | 98,000 |
| **Total cost of borrowing** | **$ 52,000** |

To follow the expense recognition principle, companies allocate bond discount to expense in each period in which the bonds are outstanding. This is referred to as **amortizing the discount**. Amortization of the discount **increases** the amount of interest expense reported each period. That is, after the company amortizes the discount, the amount of interest expense it reports in a period will exceed the contractual amount. As shown in Illustration 15.7, for the bonds issued by Candlestick, total interest expense will exceed the contractual interest by $2,000 over the life of the bonds.

As the discount is amortized, its balance declines. As a consequence, the carrying value of the bonds will increase, until at maturity the carrying value of the bonds equals their face amount. This is shown in Illustration 15.9. Appendices 15A and 15B at the end of this chapter discuss procedures for amortizing bond discount.

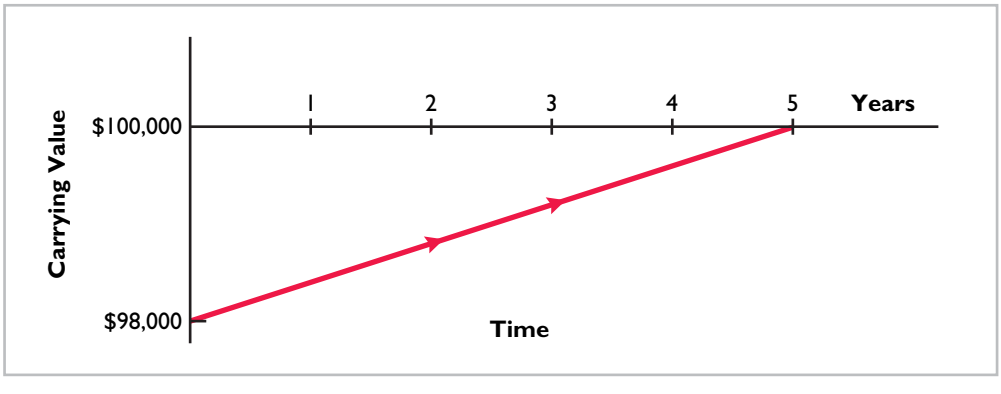


**ILLUSTRATION 15.9**
**Amortization of bond discount**

## Issuing Bonds at a Premium

To illustrate the issuance of bonds at a premium, we now assume the Candlestick Inc. bonds described above sell for $102,000 (102% of face value) rather than for $98,000. The entry to record the sale is as follows.

| | | | |
|---|---|---|---|
| Jan. 1 | Cash | 102,000 | |
| | Bonds Payable | | 100,000 |
| | Premium on Bonds Payable | | 2,000 |
| | (To record sale of bonds at a premium) | | |

| A | = | L | + | SE |
|---|---|---|---|---|
| +102,000 | | +100,000 | | +2,000 |

**Cash Flows** +102,000

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Candlestick adds the premium on bonds payable **to the bonds payable amount** on the balance sheet, as shown in Illustration 15.10 (see Helpful Hint).

**ILLUSTRATION 15.10**
**Statement presentation of bond premium**

| Candlestick Inc.<br>Balance Sheet (partial) | | |
|---|---|---|
| Long-term liabilities | | |
| Bonds payable | $100,000 | |
| **Add: Premium on bonds payable** | 2,000 | **$102,000** |

**HELPFUL HINT**

| Premium on Bonds Payable | |
|---|---|
| Decrease<br>Debit | Increase<br>Credit<br>↓<br>Normal<br>Balance |

The sale of bonds above face value causes the total cost of borrowing to be **less than the bond interest paid**. The reason: The borrower is not required to pay the bond premium at the maturity date of the bonds. Thus, the bond premium is considered to be **a reduction in the cost of borrowing** that reduces bond interest over the life of the bonds. The total cost of borrowing $102,000 for Candlestick is computed as shown in Illustration 15.11.

**ILLUSTRATION 15.11**
**Total cost of borrowing—bonds issued at a premium**

| Bonds Issued at a Premium | |
|---|---|
| Annual interest payments ($100,000 × 10% = $10,000; $10,000 × 5) | $50,000 |
| Less: Bond premium ($102,000 − $100,000) | 2,000 |
| **Total cost of borrowing** | **$48,000** |

Alternatively, we can compute the cost of borrowing as shown in Illustration 15.12.

**ILLUSTRATION 15.12**
**Alternative computation of total cost of borrowing—bonds issued at a premium**

| Bonds Issued at a Premium | |
|---|---|
| Principal at maturity | $100,000 |
| Annual interest payments ($10,000 × 5) | 50,000 |
| Cash to be paid to bondholders | 150,000 |
| Less: Cash received from bondholders | 102,000 |
| **Total cost of borrowing** | **$ 48,000** |

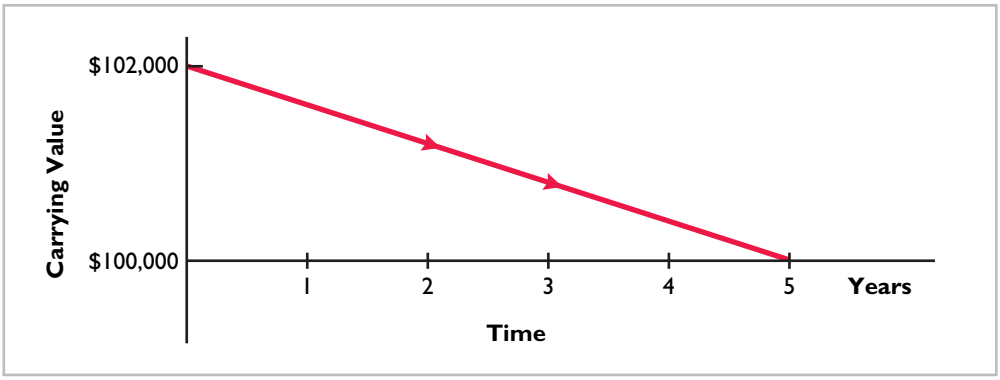
**HELPFUL HINT**

**Both a discount and a premium account are valuation accounts. A *valuation account* is one that is needed to value properly the item to which it relates.**

Similar to bond discount, companies allocate bond premium to expense in each period in which the bonds are outstanding (see Helpful Hint). This is referred to as **amortizing the premium**. Amortization of the premium **decreases** the amount of interest expense reported each period. That is, after the company amortizes the premium, the amount of interest expense it reports in a period will be less than the contractual amount. As shown in Illustration 15.11, for the bonds issued by Candlestick, contractual interest will exceed the interest expense by $2,000 over the life of the bonds.

As the premium is amortized, its balance declines. As a consequence, the carrying value of the bonds will decrease, until at maturity the carrying value of the bonds equals their face amount. This is shown in Illustration 15.13. Appendices 15A and 15B at the end of this chapter discuss procedures for amortizing bond premium.

**ILLUSTRATION 15.13**
**Amortization of bond premium**



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### DO IT! 2a | Bond Issuance

Giant Corporation issues $200,000 of bonds for $189,000. (a) Prepare the journal entry to record the issuance of the bonds, and (b) show how the bonds would be reported on the balance sheet at the date of issuance.

**ACTION PLAN**

- Record cash received, bonds payable at face value, and the difference as a discount or premium.
- Report discount as a deduction from bonds payable and premium as an addition to bonds payable.

**Solution**

| | | | | |
|---|---|---|---|---|
| **a.** | Cash | | 189,000 | |
| | Discount on Bonds Payable | | 11,000 | |
| | Bonds Payable | | | 200,000 |
| | (To record sale of bonds at a discount) | | | |

| | | | |
|---|---|---|---|
| **b.** | Long-term liabilities | | |
| | Bonds payable | $200,000 | |
| | Less: Discount on bonds payable | 11,000 | $189,000 |

Related exercise material: **BE15.1, BE15.2, BE15.3, BE15.4, BE15.5, DO IT! 15.2a, E15.2, E15.3, E15.4, and E15.6.**

## Redeeming Bonds at Maturity

Regardless of the issue price of bonds, the book value of the bonds at maturity will equal their face value. Assuming that the company pays and records separately the interest for the last interest period, Candlestick Inc. records the redemption of its bonds at maturity as follows.

| | | | | |
|---|---|---|---|---|
| Jan. 1 | Bonds Payable | | 100,000 | |
| | Cash | | | 100,000 |
| | (To record redemption of bonds at maturity) | | | |

A = L + SE
–100,000
–100,000

**Cash Flows**
–100,000

## Redeeming Bonds before Maturity

Bonds may be redeemed before maturity (see **Helpful Hint**). A company may decide to redeem bonds before maturity to reduce interest cost and to remove debt from its balance sheet. A company should redeem debt early only if it has sufficient cash resources.

When a company redeems bonds before maturity, it is necessary to (1) eliminate the carrying value of the bonds at the redemption date, (2) record the cash paid, and (3) recognize the gain or loss on redemption. The **carrying value** of the bonds is the face value of the bonds less any remaining bond discount or plus any remaining bond premium at the redemption date.

**HELPFUL HINT**

If a bond is redeemed prior to its maturity date and its carrying value exceeds its redemption price, this results in a gain.

To illustrate, assume that Candlestick Inc. has sold its bonds at a premium. At the end of the fourth period, Candlestick redeems these bonds at 103 after paying the annual interest. Assume that the carrying value of the bonds at the redemption date is $100,400 (principal $100,000 and premium $400). Candlestick records the redemption at the end of the fourth interest period (January 1, 2024) as follows.

| | | | | |
|---|---|---|---|---|
| Jan. 1 | Bonds Payable | | 100,000 | |
| | Premium on Bonds Payable | | 400 | |
| | Loss on Bond Redemption | | 2,600 | |
| | Cash | | | 103,000 |
| | (To record redemption of bonds at 103) | | | |

A = L + SE
–100,000
–400
–2,600 Exp
–103,000

**Cash Flows**
–103,000

Note that the loss of $2,600 is the difference between the cash paid of $103,000 and the carrying value of the bonds of $100,400.

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## People, Planet, and Profit Insight

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### How About Some Green Bonds?

Green bonds are debt used to fund activities such as renewable-energy projects. For example, a company may use the proceeds from the sale of green bonds to clean up its manufacturing operations and cut waste (such as related to energy consumption).

The use of green bonds has taken off as companies now have guidelines as to how to disclose and report on these green-bond proceeds. These standardized disclosures provide transparency as to how these bonds are used and their effect on overall profitability.

Investors are taking a strong interest in these bonds. Investing companies are installing socially responsible investing teams and have started to integrate sustainability into their investment processes. The disclosures of how companies are using the bond proceeds help investors to make better financial decisions.

**Source:** Ben Edwards, "Green Bonds Catch On," *Wall Street Journal* (April 3, 2014), p. C5.

**Why might standardized disclosure help investors to better understand how proceeds from the sale or issuance of bonds are used? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 2b | Bond Redemption

R & B Inc. issued $500,000, 10-year bonds at a discount. Prior to maturity, when the carrying value of the bonds is $496,000, the company redeems the bonds at 98. Prepare the entry to record the redemption of the bonds.

**ACTION PLAN**

- **Determine and eliminate the carrying value of the bonds.**
- **Record the cash paid.**
- **Compute and record the gain or loss (the difference between the first two items).**

### Solution

There is a gain on redemption. The cash paid, $490,000 ($500,000 × 98%), is less than the carrying value of $496,000. The entry is:

| | | |
|---|---|---|
| Bonds Payable | 500,000 | |
| Discount on Bonds Payable | | 4,000 |
| Gain on Bond Redemption | | 6,000 |
| Cash | | 490,000 |
| (To record redemption of bonds at 98) | | |

Related exercise material: **BE15.6, DO IT! 15.2b, E15.5, E15.7, and E15.8.**

# Accounting for Long-Term Notes Payable

**LEARNING OBJECTIVE 3**

Explain how to account for long-term notes payable.

Another type of long-term obligation is long-term notes payable. The use of notes payable in long-term debt financing is quite common. **Long-term notes payable** are similar to short-term interest-bearing notes payable except that the term of the notes exceeds one year. In periods of unstable interest rates, lenders may tie the interest rate on long-term notes to changes in the market rate for comparable loans.

A long-term note may be secured by a **mortgage** that pledges title to specific assets as security for a loan. Individuals widely use **mortgage notes payable** to purchase homes, and many small and some large companies use them to acquire plant assets. At one time, approximately 18% of **McDonald's** long-term debt related to mortgage notes on land, buildings, and improvements.

Like other long-term notes payable, the mortgage loan terms may stipulate either a **fixed** or an **adjustable** interest rate. The interest rate on a fixed-rate mortgage remains the same over the life of the mortgage. The interest rate on an adjustable-rate mortgage is adjusted periodically to reflect changes in the market rate of interest. Typically, the terms require the borrower

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to make equal installment payments over the term of the loan. Each payment consists of (1) interest on the unpaid balance of the loan and (2) a reduction of loan principal. While the total amount of the payment remains constant, the interest decreases each period, while the portion applied to the loan principal increases.

Companies initially record mortgage notes payable at face value. They subsequently make entries for each installment payment. To illustrate, assume that Porter Technology Inc. issues a $500,000, 8%, 20-year mortgage note on December 31, 2020, to obtain needed financing for a new research laboratory. The terms provide for annual installment payments of $50,926 (not including real estate taxes and insurance). **Illustration 15.14** shows the installment payment schedule for the first four years.

**ILLUSTRATION 15.14**
**Mortgage installment payment schedule**

| Interest Period | (A) Cash Payment | (B) Interest Expense (D) × 8% | (C) Reduction of Principal (A) − (B) | (D) Principal Balance (D) − (C) |
|---|---|---|---|---|
| Issue date | | | | $500,000 |
| 1 | $50,926 | $40,000 | $10,926 | 489,074 |
| 2 | 50,926 | 39,126 | 11,800 | 477,274 |
| 3 | 50,926 | 38,182 | 12,744 | 464,530 |
| 4 | 50,926 | 37,162 | 13,764 | 450,766 |

Porter records the mortgage loan on December 31, 2020, as follows.

| | | | |
|---|---|---|---|
| Dec. 31 | Cash | 500,000 | |
| | Mortgage Payable | | 500,000 |
| | (To record mortgage loan) | | |

A = L + SE
+500,000
+500,000
Cash Flows
+500,000

On December 31, 2021, Porter records the first installment payment as follows.

| | | | |
|---|---|---|---|
| Dec. 31 | Interest Expense | 40,000 | |
| | Mortgage Payable | 10,926 | |
| | Cash | | 50,926 |
| | (To record annual payment on mortgage) | | |

A = L + SE
–40,000 Exp
–10,926
–50,926
Cash Flows
–50,926

**In the balance sheet, the company reports the reduction in principal for the next year as a current liability, and it classifies the remaining unpaid principal balance as a long-term liability.** At December 31, 2021, the total liability is $489,074. Of that amount, $11,800 is current and $477,274 ($489,074 − $11,800) is long-term.

## DO IT! 3 | Long-Term Notes

Cole Research issues a $250,000, 6%, 20-year mortgage note to obtain needed financing for a new lab. The terms call for annual payments of $21,796 each. Prepare the entries to record the mortgage loan and the first payment.

**ACTION PLAN**
- Record the issuance of the note as a cash receipt and a liability.
- Each installment payment consists of interest and payment of principal.

### Solution

| | | | |
|---|---|---|---|
| | Cash | 250,000 | |
| | Mortgage Payable | | 250,000 |
| | (To record mortgage loan) | | |
| | Interest Expense | 15,000* | |
| | Mortgage Payable | 6,796 | |
| | Cash | | 21,796 |
| | (To record annual payment on mortgage) | | |

*Interest expense = $250,000 × 6% = $15,000.

Related exercise material: **BE15.7, DO IT! 15.3, E15.9, and E15.10.**

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# Reporting and Analyzing Long-Term Liabilities

**LEARNING OBJECTIVE 4**

Discuss how long-term liabilities are reported and analyzed.

**ETHICS NOTE**

**Some companies try to minimize the amount of debt reported on their balance sheets by not reporting certain types of commitments as liabilities. This subject is of intense interest in the financial community.**

## Presentation

Companies report long-term liabilities in a separate section of the balance sheet immediately following current liabilities, as shown in **Illustration 15.15**. Alternatively, companies may present summary data in the balance sheet, with detailed data (interest rates, maturity dates, conversion privileges, and assets pledged as collateral) shown in a supporting schedule in the notes (see **Ethics Note**).

**ILLUSTRATION 15.15**
**Balance sheet presentation of long-term liabilities**

**Lax Corporation**
**Balance Sheet (partial)**

| | | |
|---|---|---|
| Long-term liabilities | | |
| Bonds payable 10% due in 2025 | $1,000,000 | |
| Less: Discount on bonds payable | 80,000 | $ 920,000 |
| Mortgage payable, 11%, due in 2031 and secured by plant assets | | 500,000 |
| Lease liability | | 440,000 |
| Total long-term liabilities | | $1,860,000 |

Companies report the current maturities of long-term debt under current liabilities if they are to be paid within one year or the operating cycle, whichever is longer.

## Use of Ratios

Two ratios are helpful in better understanding a company's debt-paying ability and long-term solvency. Solvency refers to the ability of a company to survive over a long period of time. Long-term creditors and stockholders are interested in a company's long-run solvency. Of particular interest is the company's ability to pay interest as it comes due and to repay the face value of the debt at maturity.

The **debt to assets ratio** measures the percentage of the total assets provided by creditors. It is computed by dividing total liabilities (both current and long-term liabilities) by total assets. To illustrate, we use data from a recent **General Motors** annual report. The company reported total liabilities of $141,653 million, total assets of $177,677 million, interest expense of $403 million, income taxes of $228 million, and net income of $4,018 million. As shown in **Illustration 15.16**, General Motors' debt to assets ratio is 80%. The higher the percentage of debt to assets, the greater the risk that the company may be unable to meet its maturing obligation.

**ILLUSTRATION 15.16**
**Debt to assets ratio**

| Total Liabilities | ÷ | Total Assets | = | Debt to Assets Ratio |
|---|---|---|---|---|
| $141,653 | ÷ | $177,677 | = | 80% |

**Times interest earned** indicates the company's ability to meet interest payments as they come due. It is computed by dividing the sum of net income, interest expense, and income tax

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expense by interest expense. As shown in **Illustration 15.17**, General Motors' times interest earned is 11.5 times. This interest coverage is considered safe.

| Net Income + Interest Expense + Income Tax Expense | ÷ | Interest Expense | = | Times Interest Earned |
|---|---|---|---|---|
| $4,018 + $403 + $228 | ÷ | $403 | = | 11.5 times |

**ILLUSTRATION 15.17**
**Times interest earned**

## Investor Insight

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### Debt Masking

In the wake of the financial crisis, many financial institutions are wary of reporting too much debt on their financial statements, for fear that investors will consider them too risky. The Securities and Exchange Commission (SEC) is concerned that some companies engage in "debt masking" to make it appear that they use less debt than they actually do. These companies enter into transactions at the end of the accounting period that essentially remove debt from their books. Shortly after the end of the period, they reverse the transaction and the debt goes back on their books. The *Wall Street Journal* reported that 18 large banks "had consistently lowered one type of debt at the end of each of the past five quarters, reducing it on average by 42% from quarterly peaks."

**Source:** Tom McGinty, Kate Kelly, and Kara Scannell, "Debt 'Masking' Under Fire," *Wall Street Journal Online* (April 21, 2010).

**What implications does debt masking have for an investor that is using the debt to assets ratio to evaluate a company's solvency? (Go to WileyPLUS for this answer and additional questions.)**

# Debt and Equity Financing

To obtain large amounts of long-term capital, corporate management has to decide whether to issue additional common stock (equity financing), bonds or notes (debt financing), or a combination of the two. This decision is important to both the company and to investors and creditors. The capital structure of a company provides clues as to the potential profit that can be achieved and the risks taken by the company. Debt financing offers these advantages over common stock, as shown in **Illustration 15.18**.

| Bond Financing | Advantages |
|---|---|
| | 1. **Stockholder control is not affected.** Bondholders do not have voting rights, so current owners (stockholders) retain full control of the company. |
| | 2. **Tax savings result.** Bond interest is deductible for tax purposes; dividends on stock are not. |
| Income statement / EPS | 3. **Earning per share (EPS) may be higher.** Although bond interest expense reduces net income, earning per share is higher under bond financing because no additional shares of common stock are issued. |

**ILLUSTRATION 15.18**
**Advantages of bond financing over common stock**

As Illustration 15.18 shows, one reason to issue bonds is that they do not affect stockholder control. Because bondholders do not have voting rights, owners can raise capital with bonds and still maintain corporate control. In addition, bonds are attractive to

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corporations because the cost of bond interest is tax-deductible. As a result of this tax treatment, which stock dividends do not offer, bonds may result in lower cost of capital than equity financing.

To illustrate another advantage of bond financing, assume that Microsystems, Inc. is considering two plans for financing the construction of a new $5 million plant. Plan A involves issuance of 200,000 shares of common stock at the current market price of $25 per share. Plan B involves issuance of $5 million, 8% bonds at face value. Income before interest and taxes on the new plant will be $1.5 million. Income taxes are expected to be 30%. Microsystems currently has 100,000 shares of common stock outstanding. Illustration 15.19 shows the alternative effects on earnings per share.

**ILLUSTRATION 15.19**

**Effects on earnings per share—stocks vs. bonds**

| | Plan A Issue Stock | Plan B Issue Bonds |
|---|---|---|
| Income before interest and taxes | $1,500,000 | $1,500,000 |
| Interest (8% × $5,000,000) | — | 400,000 |
| Income before income taxes | 1,500,000 | 1,100,000 |
| Income tax expense (30%) | 450,000 | 330,000 |
| Net income | $1,050,000 | $ 770,000 |
| Outstanding shares | 300,000 | 100,000 |
| **Earnings per share** | **$3.50** | **$7.70** |

Note that net income is $280,000 less ($1,050,000 − $770,000) with long-term debt financing (bonds). However, earnings per share is higher because there are 200,000 fewer shares of common stock outstanding.

One disadvantage in using bonds is that the company must **pay interest** on a periodic basis. In addition, the company must also **repay the principal** at the due date. A company with fluctuating earnings and a relatively weak cash position may have great difficulty making interest payments when earnings are low. Furthermore, when the economy, stock market, or a company's revenues stagnate, debt payments can gobble up cash quickly and limit a company's ability to meet its financial obligations.

# Lease Liabilities

A **lease** is a contractual agreement between a lessor (owner of a property) and a lessee (renter of the property). This arrangement gives the lessee the right to use specific property, which is owned by the **lessor**, for a specified period of time. In return for the use of the property, the **lessee** makes rental payments over the lease term to the lessor.

Leasing has grown tremendously in popularity. Today, it is the fastest growing form of capital investment. Instead of borrowing money to buy an airplane, computer, nuclear core, or satellite, a company makes periodic payments to lease these assets. Even gambling casinos lease their slot machines. The global leasing-equipment market is over a $900 billion business, with the United States accounting for about one-third of the global market.

## Accounting for Lease Arrangements

For all leases greater than one year, the lessee records a right-of-use asset and a lease liability. The lease liability is computed as the present value of the lease payments. The right-of-use asset is equal to the lease liability. To illustrate, assume that Gonzalez Company decides to lease new equipment. The lease term is four years; the economic life is estimated to be five years. The present value of the lease payments is $190,000.

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Gonzalez records the lease arrangement as follows.

| | | |
|---|---|---|
| Right-of-Use Asset | 190,000 | |
| Lease Liability | | 190,000 |
| (To record leased asset and lease liability) | | |

| A | = | L | + | SE |
|---|---|---|---|---|
| +190,000 | | | | |
| | | +190,000 | | |

**Cash Flows**
no effect

## Balance Sheet Presentation

Gonzalez reports its leased asset on the balance sheet in the long-term assets section. It reports the lease liability on the balance sheet as a liability. The portion of the lease liability expected to be paid in the next year is a current liability. The remainder is classified as a long-term liability.

## Income Statement Presentation

The income statement presentation of leases by lessees depends on whether the lease is considered a finance or operating lease. The lease is a finance lease if it meets one of five criteria (discussed in more advanced accounting courses). Leases that do not meet any of these five criteria are considered operating leases.

Under finance lease treatment, the right-of-use asset is amortized (depreciated) in a fashion similar to other fixed assets, and the interest expense is determined in a fashion similar to other long-term liabilities. Under operating lease treatment, a single expense amount is determined. The calculation of this expense amount is complex and is addressed in advanced accounting courses.

### DO IT! 4 | Lease Liability; Analysis of Long-Term Liabilities

FX Corporation leases new equipment for six years on December 31, 2020. The present value of the lease payments is $240,000. After recording this lease, FX has assets of $2,000,000, liabilities of $1,200,000, and stockholders' equity of $800,000. (a) Prepare the entry to record the lease, and (b) compute and discuss the debt to assets ratio at year-end.

**ACTION PLAN**

- Record the present value of the lease payments as an asset and a liability.
- Use the formula for the debt to assets ratio (Total liabilities divided by Total assets).

**Solution**

**a.**

| | | |
|---|---|---|
| Right-of-Use Asset | 240,000 | |
| Lease Liability | | 240,000 |
| (To record leased asset and lease liability) | | |

**b.** The debt to assets ratio = $1,200,000 ÷ $2,000,000 = 60%. This means that 60% of its assets were provided by creditors. The higher the percentage of debt to assets, the greater the risk that the company may be unable to meet its maturing obligations.

Related exercise material: **BE15.10, DO IT! 15.4, E15.13, and E15.14.**

# Appendix 15A Straight-Line Amortization

**LEARNING OBJECTIVE *5**

Apply the straight-line method of amortizing bond discount and bond premium.

## Amortizing Bond Discount

To follow the expense recognition principle, companies allocate bond discount to expense in each period in which the bonds are outstanding. The **straight-line method of amortization**

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allocates the same amount to interest expense in each interest period. The calculation is presented in Illustration 15A.1.

**ILLUSTRATION 15A.1**
**Formula for straight-line method of bond discount amortization**

| Bond Discount | ÷ | Number of Interest Periods | = | Bond Discount Amortization |
|---|---|---|---|---|

In the Candlestick Inc. example, the company sold $100,000, five-year, 10% bonds on January 1, 2020, for $98,000. This resulted in a $2,000 bond discount ($100,000 − $98,000). The bond discount amortization is $400 ($2,000 ÷ 5) for each of the five amortization periods. Candlestick records the first accrual of bond interest and the amortization of bond discount on December 31 as follows.

| A | = | L | + | SE |
|---|---|---|---|---|
| | | | | −10,400 Exp |
| | | +400 | | |
| | | +10,000 | | |

**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| Dec. 31 | Interest Expense | 10,400 | |
| | Discount on Bonds Payable | | 400 |
| | Interest Payable | | 10,000 |
| | (To record accrued bond interest and amortization of bond discount) | | |

**ALTERNATIVE TERMINOLOGY**

**The amount in the Discount on Bonds Payable account is often referred to as *Unamortized Discount on Bonds Payable*.**

Over the term of the bonds, the balance in Discount on Bonds Payable will decrease annually by the same amount until it has a zero balance at the maturity date of the bonds (see Alternative Terminology). Thus, the carrying value of the bonds at maturity will be equal to the face value of the bonds.

Preparing a bond discount amortization schedule, as shown in Illustration 15A.2, is useful to determine interest expense, discount amortization, and the carrying value of the bond. As indicated, the interest expense recorded each period is $10,400. Also note that the carrying value of the bond increases $400 each period until it reaches its face value of $100,000 at the end of period 5.

**ILLUSTRATION 15A.2** **Bond discount amortization schedule**

Candlestick Inc

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P18 fx

**Candlestick Inc.**
**Bond Discount Amortization Schedule**
**Straight-Line Method—Annual Interest Payments**
**$100,000 of 10%, 5-Year Bonds**

| Interest Periods | (A) Interest to Be Paid (10% × $100,000) | (B) Interest Expense to Be Recorded (A) + (C) | (C) Discount Amortization ($2,000 ÷ 5) | (D) Unamortized Discount (D) − (C) | (E) Bond Carrying Value ($100,000 − D) |
|---|---|---|---|---|---|
| Issue date | | | | $2,000 | $ 98,000 |
| 1 | $10,000 | $10,400 | $ 400 | 1,600 | 98,400 |
| 2 | 10,000 | 10,400 | 400 | 1,200 | 98,800 |
| 3 | 10,000 | 10,400 | 400 | 800 | 99,200 |
| 4 | 10,000 | 10,400 | 400 | 400 | 99,600 |
| 5 | 10,000 | 10,400 | 400 | 0 | 100,000 |
| | $50,000 | $52,000 | $2,000 | | |

Column **(A)** remains constant because the face value of the bonds ($100,000) is multiplied by the annual contractual interest rate (10%) each period.

Column **(B)** is computed as the interest paid (Column A) plus the discount amortization (Column C).

Column **(C)** indicates the discount amortization each period.

Column **(D)** decreases each period by the same amount until it reaches zero at maturity.

Column **(E)** increases each period by the amount of discount amortization until it equals the face value at maturity.

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# Amortizing Bond Premium

The amortization of bond premium parallels that of bond discount. **Illustration 15A.3** presents the formula for determining bond premium amortization under the straight-line method.

| Bond Premium | ÷ | Number of Interest Periods | = | Bond Premium Amortization |
|---|---|---|---|---|

**ILLUSTRATION 15A.3** **Formula for straight-line method of bond premium amortization**

Continuing our example, assume Candlestick Inc., sells the bonds previously described for $102,000, rather than $98,000. This results in a bond premium of $2,000 ($102,000 − $100,000). The premium amortization for each interest period is $400 ($2,000 ÷ 5). Candlestick records the first accrual of interest on December 31 as follows.

| | | | |
|---|---|---|---|
| Dec. 31 | Interest Expense | 9,600 | |
| | Premium on Bonds Payable | 400 | |
| | Interest Payable | | 10,000 |
| | (To record accrued bond interest and amortization of bond premium) | | |

| A | = | L | + | SE |
|---|---|---|---|---|
| | | | | −9,600 Exp |
| | | −400 | | |
| | | +10,000 | | |

**Cash Flows**
no effect

A bond premium amortization schedule, as shown in **Illustration 15A.4**, is useful to determine interest expense, premium amortization, and the carrying value of the bond. As indicated, the interest expense Candlestick records each period is $9,600. Note that the carrying value of the bond decreases $400 each period until it reaches its face value of $100,000 at the end of period 5.

**ILLUSTRATION 15A.4** **Bond premium amortization schedule**

Candlestick Inc

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P18 fx

**Candlestick Inc.**
**Bond Premium Amortization Schedule**
**Straight-Line Method—Annual Interest Payments**
**$100,000 of 10%, 5-Year Bonds**

| Interest Periods | (A) Interest to Be Paid (10% × $100,000) | (B) Interest Expense to Be Recorded (A) – (C) | (C) Premium Amortization ($2,000 ÷ 5) | (D) Unamortized Premium (D) – (C) | (E) Bond Carrying Value ($100,000 + D) |
|---|---|---|---|---|---|
| Issue date | | | | $2,000 | $102,000 |
| 1 | $10,000 | $ 9,600 | $ 400 | 1,600 | 101,600 |
| 2 | 10,000 | 9,600 | 400 | 1,200 | 101,200 |
| 3 | 10,000 | 9,600 | 400 | 800 | 100,800 |
| 4 | 10,000 | 9,600 | 400 | 400 | 100,400 |
| 5 | 10,000 | 9,600 | 400 | 0 | 100,000 |
| | $50,000 | $48,000 | $2,000 | | |

Column **(A)** remains constant because the face value of the bonds ($100,000) is multiplied by the annual contractual interest rate (10%) each period.
Column **(B)** is computed as the interest paid (Column A) less the premium amortization (Column C).
Column **(C)** indicates the premium amortization each period.
Column **(D)** decreases each period by the same amount until it reaches zero at maturity.
Column **(E)** decreases each period by the amount of premium amortization until it equals the face value at maturity.

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# Appendix 15B Effective-Interest Amortization

**LEARNING OBJECTIVE *6**

Apply the effective-interest method of amortizing bond discount and bond premium.

To follow the expense recognition principle, companies allocate bond discount to expense in each period in which the bonds are outstanding. However, to completely comply with the expense recognition principle, interest expense as a percentage of carrying value should not change over the life of the bonds.

This percentage, referred to as the **effective-interest rate**, is established when the bonds are issued and remains constant in each interest period. Unlike the straight-line method, the effective-interest method of amortization accomplishes this result.

Under the **effective-interest method of amortization**, the amortization of bond discount or bond premium results in periodic interest expense equal to a constant percentage of the carrying value of the bonds. The effective-interest method results in **varying amounts** of amortization and interest expense per period but a **constant percentage rate**. In contrast, the straight-line method results in constant amounts of amortization and interest expense per period but a varying percentage rate.

Companies follow three steps under the effective-interest method:

1. Compute the **bond interest expense** by multiplying the carrying value of the bonds at the beginning of the interest period by the effective-interest rate.
2. Compute the **bond interest paid** (or accrued) by multiplying the face value of the bonds by the contractual interest rate.
3. Compute the **amortization amount** by determining the difference between the amounts computed in steps (1) and (2).

Illustration 15B.1 depicts these steps.

**ILLUSTRATION 15B.1**
**Computation of amortization using effective-interest method**

| (1) Bond Interest Expense | | | (2) Bond Interest Paid | | | (3) |
|---|---|---|---|---|---|---|
| Carrying Value of Bonds at Beginning of Period | × Effective-Interest Rate | − | Face Amount of Bond | × Contractual Interest Rate | = | Amortization Amount |

**HELPFUL HINT**

Note that the amount of periodic interest expense increases over the life of the bonds when the effective-interest method is used for bonds issued at a discount. The reason is that a constant percentage is applied to an increasing bond carrying value to compute interest expense. The carrying value is increasing because of the amortization of the discount.

**Both the straight-line and effective-interest methods of amortization result in the same total amount of interest expense over the term of the bonds.** Furthermore, interest expense each interest period is generally comparable in amount. However, **when the amounts are materially different, generally accepted accounting principles (GAAP) require use of the effective-interest method**.

## Amortizing Bond Discount

In the Candlestick Inc. example, the company sold $100,000, five-year, 10% bonds on January 1, 2020, for $98,000. This resulted in a $2,000 bond discount ($100,000 − $98,000). This discount results in an effective-interest rate of approximately 10.5348% (see Helpful Hint). (The effective-interest rate can be computed using the techniques shown in Appendix G.)

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Preparing a bond discount amortization schedule as shown in **Illustration 15B.2** facilitates the recording of interest expense and the discount amortization. Note that interest expense as a percentage of carrying value remains constant at 10.5348%.

**ILLUSTRATION 15B.2** **Bond discount amortization schedule**

Candlestick Inc

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

**Candlestick Inc.**
**Bond Discount Amortization Schedule**
**Effective-Interest Method—Annual Interest Payments**
**10% Bonds Issued at 10.5348%**

| Interest Periods | (A) Interest to Be Paid (10% × $100,000) | (B) Interest Expense to Be Recorded (10.5348% × Preceding Bond Carrying Value) | (C) Discount Amortization (B) – (A) | (D) Unamortized Discount (D) – (C) | (E) Bond Carrying Value ($100,000 – D) |
|---|---|---|---|---|---|
| Issue date | | | | $2,000 | $ 98,000 |
| 1 | $10,000 | $10,324 (10.5348% × $98,000) | $ 324 | 1,676 | 98,324 |
| 2 | 10,000 | 10,358 (10.5348% × $98,324) | 358 | 1,318 | 98,682 |
| 3 | 10,000 | 10,396 (10.5348% × $98,682) | 396 | 922 | 99,078 |
| 4 | 10,000 | 10,438 (10.5348% × $99,078) | 438 | 484 | 99,516 |
| 5 | 10,000 | 10,484 (10.5348% × $99,516) | 484 | –0– | 100,000 |
| | $50,000 | $52,000 | $2,000 | | |

Column **(A)** remains constant because the face value of the bonds ($100,000) is multiplied by the annual contractual interest rate (10%) each period.
Column **(B)** is computed as the preceding bond carrying value times the annual effective-interest rate (10.5348%).
Column **(C)** indicates the discount amortization each period.
Column **(D)** decreases each period until it reaches zero at maturity.
Column **(E)** increases each period until it equals face value at maturity.

For the first interest period, the computations of bond interest expense and the bond discount amortization are as shown in **Illustration 15B.3**.

| | |
|---|---|
| Bond interest expense ($98,000 × 10.5348%) | $10,324 |
| Less: Bond interest paid ($100,000 × 10%) | 10,000 |
| **Bond discount amortization** | $ 324 |

**ILLUSTRATION 15B.3**
**Computation of bond discount amortization**

As a result, Candlestick records the accrual of interest and amortization of bond discount on December 31 as follows.

| | | | |
|---|---|---|---|
| Dec. 31 | Interest Expense | 10,324 | |
| | Discount on Bonds Payable | | 324 |
| | Interest Payable | | 10,000 |
| | (To record accrued interest and amortization of bond discount) | | |

A = L + SE
−10,324 Exp
+324
+10,000

**Cash Flows**
no effect

For the second interest period, bond interest expense will be $10,358 ($98,324 × 10.5348%), and the discount amortization will be $358. At December 31, Candlestick makes the following adjusting entry.

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| A | = | L | + | SE |
|---|---|---|---|---|
| | | | | −10,358 Exp |
| | | | | +358 |
| | | | | +10,000 |

**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| Dec. 31 | Interest Expense | 10,358 | |
| | Discount on Bonds Payable | | 358 |
| | Interest Payable | | 10,000 |
| | (To record accrued interest and amortization of bond discount) | | |

## Amortizing Bond Premium

Continuing our example, assume Candlestick Inc. sells the bonds previously described for $102,000 rather than $98,000. This would result in a bond premium of $2,000 ($102,000 − $100,000). This premium results in an effective-interest rate of approximately 9.4794%. (The effective-interest rate can be solved for using the techniques shown in Appendix G.) **Illustration 15B.4** shows the bond premium amortization schedule.

**ILLUSTRATION 15B.4** **Bond premium amortization schedule**

Candlestick Inc

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

**Candlestick Inc.**
**Bond Premium Amortization Schedule**
**Effective-Interest Method—Annual Interest Payments**
**10% Bonds Issued at 9.4794%**

| Interest Periods | (A) Interest to Be Paid (10% × $100,000) | (B) Interest Expense to Be Recorded (9.4794% × Preceding Bond Carrying Value) | (C) Premium Amortization (A) − (B) | (D) Unamortized Premium (D) − (C) | (E) Bond Carrying Value ($100,000 + D) |
|---|---|---|---|---|---|
| Issue date | | | | $2,000 | $102,000 |
| 1 | $10,000 | $ 9,669 (9.4794% × $102,000) | $ 331 | 1,669 | 101,669 |
| 2 | 10,000 | 9,638 (9.4794% × $101,669) | 362 | 1,307 | 101,307 |
| 3 | 10,000 | 9,603 (9.4794% × $101,307) | 397 | 910 | 100,910 |
| 4 | 10,000 | 9,566 (9.4794% × $100,910) | 434 | 476 | 100,476 |
| 5 | 10,000 | 9,524* (9.4794% × $100,476) | 476* | –0– | 100,000 |
| | $50,000 | $48,000 | $2,000 | | |

Column (A) remains constant because the face value of the bonds ($100,000) is multiplied by the contractual interest rate (10%) each period.
Column (B) is computed as the carrying value of the bonds times the annual effective-interest rate (9.4794%).
Column (C) indicates the premium amortization each period.
Column (D) decreases each period until it reaches zero at maturity.
Column (E) decreases each period until it equals face value at maturity.

*Rounded to eliminate remaining discount resulting from rounding the effective rate.

For the first interest period, the computations of bond interest expense and the bond premium amortization are as shown in **Illustration 15B.5**.

**ILLUSTRATION 15B.5**
**Computation of bond premium amortization**

| | |
|---|---|
| Bond interest paid ($100,000 × 10%) | $10,000 |
| Less: Bond interest expense ($102,000 × 9.4794%) | 9,669 |
| **Bond premium amortization** | $ 331 |

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| | | | |
|---|---|---|---|
| Dec. 31 | Interest Expense | 9,669 | |
| | Premium on Bonds Payable | 331 | |
| | Interest Payable | | 10,000 |
| | (To record accrued interest and amortization of bond premium) | | |

A = L + SE
−9,669 Exp
−331
+10,000

**Cash Flows**
no effect

For the second interest period, interest expense will be $9,638, and the premium amortization will be $362. Note that the amount of periodic interest expense decreases over the life of the bond when companies apply the effective-interest method to bonds issued at a premium. The reason is that a constant percentage is applied to a decreasing bond carrying value to compute interest expense. The carrying value is decreasing because of the amortization of the premium.

# Review and Practice

## Learning Objectives Review

### 1 Describe the major characteristics of bonds.

Bonds can have many different features and may be secured, unsecured, convertible, or callable. The terms of the bond issue are set forth in a bond indenture, and a bond certificate provides the specific information about the bond itself.

### 2 Explain how to account for bond transactions.

When companies issue bonds, they debit Cash for the cash proceeds and credit Bonds Payable for the face value of the bonds. The account Premium on Bonds Payable shows a bond premium. Discount on Bonds Payable shows a bond discount.

When bondholders redeem bonds at maturity, the issuing company credits Cash and debits Bonds Payable for the face value of the bonds. When bonds are redeemed before maturity, the issuing company (a) eliminates the carrying value of the bonds at the redemption date, (b) records the cash paid, and (c) recognizes the gain or loss on redemption.

### 3 Explain how to account for long-term notes payable.

Long-term notes payable are similar to short-term notes payable except the terms of the long-term notes exceed one year. Each payment consists of (1) interest on the unpaid balance of the loan and (2) a reduction of loan principal. The interest decreases each period, while the portion applied to the loan principal increases.

### 4 Discuss how long-term liabilities are reported and analyzed.

Companies should report the nature and amount of each long-term debt in the balance sheet or in the notes accompanying the financial statements. Companies may sell bonds to investors to raise long-term capital. Bonds offer the following advantages over common stock: (a) stockholder control is not affected, (b) tax savings result, and (c) earnings per share of common stock may be higher.

Stockholders and long-term creditors are interested in a company's long-run solvency. Debt to assets and times interest earned are two ratios that provide information about debt-paying ability and long-run solvency.

For all leases greater than one year, the lessee records a right-of-use asset and a lease liability. The lease liability is computed as the present value of the lease liability.

### *5 Apply the straight-line method of amortizing bond discount and bond premium.

The straight-line method of amortization results in a constant amount of amortization and interest expense per period.

### *6 Apply the effective-interest method of amortizing bond discount and bond premium.

The effective-interest method results in varying amounts of amortization and interest expense per period but a constant percentage rate of interest. When the difference between the straight-line and effective-interest method is material, GAAP requires use of the effective-interest method.

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## Glossary Review

**Bond certificate** A legal document that indicates the name of the issuer, the face value of the bonds, the contractual interest rate, and maturity date of the bonds. (p. 15-3).

**Bond indenture** A legal document that sets forth the terms of the bond issue. (p. 15-3).

**Bonds** A form of interest-bearing notes payable issued by corporations, universities, and governmental entities. (p. 15-3).

**Callable bonds** Bonds that are subject to redemption (buy back) at a stated dollar amount prior to maturity at the option of the issuer. (p. 15-3).

**Contractual interest rate** Rate used to determine the amount of cash interest the borrower pays and the investor receives. (p. 15-3).

**Convertible bonds** Bonds that permit bondholders to convert them into common stock at the bondholders' option. (p. 15-3).

**Debenture bonds** Bonds issued against the general credit of the borrower. Also called unsecured bonds. (p. 15-3).

**Debt to assets ratio** A solvency measure that indicates the percentage of total assets provided by creditors; computed as total liabilities divided by total assets. (p. 15-14).

**Discount (on a bond)** The difference between the face value of a bond and its selling price, when the bond is sold for less than its face value. (p. 15-7).

***Effective-interest method of amortization** Amortization of bond discount or bond premium which results in periodic interest expense equal to a constant percentage of the carrying value of the bonds. (p. 15-20).

***Effective-interest rate** Rate established when bonds are issued that maintains a constant value for interest expense as a percentage of bond carrying value in each interest period. (p. 15-20).

**Face value** Amount of principal due at the maturity date of the bond. (p. 15-3).

**Long-term liabilities** Obligations expected to be paid more than one year in the future. (p. 15-2).

**Market interest rate** The rate investors demand for loaning funds to the corporation. (p. 15-5).

**Maturity date** The date on which the final payment on the bond is due from the bond issuer to the investor. (p. 15-3).

**Mortgage bond** A bond secured by real estate. (p. 15-3).

**Mortgage notes payable** A long-term note secured by a mortgage that pledges title to specific assets as security for a loan. (p. 15-12).

**Premium (on a bond)** The difference between the selling price and the face value of a bond, when the bond is sold for more than its face value. (p. 15-8).

**Secured bonds** Bonds that have specific assets of the issuer pledged as collateral. (p. 15-3).

**Sinking fund bonds** Bonds secured by specific assets set aside to redeem them. (p. 15-3).

***Straight-line method of amortization** Allocates the same amount to interest expense in each interest period. (p. 15-17).

**Times interest earned** A solvency measure that indicates a company's ability to meet interest payments; computed by dividing the sum of net income, interest expense, and income tax expense by interest expense. (p. 15-14).

**Time value of money** The relationship between time and money. A dollar received today is worth more than a dollar promised at some time in the future. (p. 15-5).

**Unsecured bonds** Bonds issued against the general credit of the borrower. Also called debenture bonds. (p. 15-3).

## Practice Multiple-Choice Questions

**1.** **(LO 1)** The term used for bonds that are unsecured is:

**a.** callable bonds.
**b.** U.S. Treasury bonds.
**c.** debenture bonds.
**d.** convertible bonds.

**2.** **(LO 1)** The market interest rate:

**a.** is the contractual interest rate used to determine the amount of cash interest paid by the borrower.
**b.** is listed in the bond indenture.
**c.** is the rate investors demand for loaning funds.
**d.** More than one of the above is true.

**3.** **(LO 2)** Karson Inc. issues 10-year bonds with a maturity value of $200,000. If the bonds are issued at a premium, this indicates that:

**a.** the contractual interest rate exceeds the market interest rate.
**b.** the market interest rate exceeds the contractual interest rate.
**c.** the contractual interest rate and the market interest rate are the same.
**d.** no relationship exists between the two rates.

**4.** **(LO 2)** Four-Nine Corporation issued bonds that pay interest every January 1. The entry to accrue bond interest at December 31 includes a:

**a.** debit to Interest Payable.
**b.** credit to Cash.
**c.** credit to Interest Expense.
**d.** credit to Interest Payable.

**5.** **(LO 2)** Gester Corporation redeems its $100,000 face value bonds at 105 on January 1, following the payment of annual interest. The carrying value of the bonds at the redemption date is $103,745. The entry to record the redemption will include a:

**a.** credit of $3,745 to Loss on Bond Redemption.
**b.** debit of $3,745 to Premium on Bonds Payable.
**c.** credit of $1,255 to Gain on Bond Redemption.
**d.** debit of $5,000 to Premium on Bonds Payable.

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**6.** **(LO 3)** Howard Corporation issued a 20-year mortgage note payable on January 1, 2020. At December 31, 2020, the unpaid principal balance will be reported as:

**a.** a current liability.
**b.** a long-term liability.
**c.** part current and part long-term liability.
**d.** interest payable.

**7.** **(LO 3)** Andrews Inc. issues a $497,000, 10% 3-year mortgage note on January 1. The note will be paid in three annual installments of $200,000, each payable at the end of the year. What is the amount of interest expense that should be recognized by Andrews Inc. in the second year?

**a.** $16,567.
**b.** $49,700.
**c.** $34,670.
**d.** $346,700.

**8.** **(LO 4)** For 2020, Corn Flake Corporation reported net income of $300,000. Interest expense was $40,000 and income taxes were $100,000. The times interest earned was:

**a.** 3 times.
**b.** 4.4 times.
**c.** 7.5 times.
**d.** 11 times.

*__9.__ **(LO 5)** On December 31, Hurley Corporation issues $500,000, 5-year, 12% bonds at 96 with interest payable on December 31, 2020. The entry on December 31, 2021, to record payment of bond interest and the amortization of bond discount using the straight-line method will include a:

**a.** debit to Interest Expense $30,000.
**b.** debit to Interest Expense $60,000.
**c.** credit to Discount on Bonds Payable $4,000.
**d.** credit to Discount on Bonds Payable $2,000.

*__10.__ **(LO 5)** For the bonds issued in Question 9, what is the carrying value of the bonds at the end of the third interest period?

**a.** $492,000.
**b.** $488,000.
**c.** $486,000.
**d.** $464,000.

*__11.__ **(LO 6)** On January 1, Besalius Inc. issued $1,000,000, 9% bonds for $938,554. The market rate of interest for these bonds is 10%. Interest is payable annually on December 31. Besalius uses the effective-interest method of amortizing bond discount. At the end of the first year, Besalius should report unamortized bond discount of:

**a.** $54,900.
**b.** $57,591.
**c.** $51,610.
**d.** $51,000.

*__12.__ **(LO 6)** On December 31, Dias Corporation issued $1,000,000, 14%, 5-year bonds with interest payable annually on December 31. The bonds sold for $1,072,096. The market rate of interest for these bonds was 12%. On the first interest date, using the effective-interest method, the debit entry to Interest Expense is for:

**a.** $120,000.
**b.** $125,581.
**c.** $128,652.
**d.** $140,000.

## Solutions

**1.** **c.** Debenture bonds are not secured by any collateral. The other choices are incorrect because (a) callable bonds can be paid off or retired by the issuer before they reach their maturity date, (b) U.S. Treasury bonds are secured by the federal government, and (d) convertible bonds permit bondholders to convert them into common stock at the bondholders' option.

**2.** **c.** Market interest rate is the rate investors demand for loaning funds. The other choices are incorrect because (a) market interest rate is the same as contractual interest rate only if bonds sell at face value (par value) and (b) the contractual interest rate, not the market interest rate, is listed in the bond indenture. Choice (d) is wrong as there is only one correct answer.

**3.** **a.** When bonds are issued at a premium, this indicates that the contractual interest rate is higher than the market interest rate. The other choices are incorrect because (b) when the market interest rate exceeds the contractual interest rate, bonds are sold at a discount; (c) when the contractual interest rate and the market interest rate are the same, bonds will be issued at par; and (d) the relationship between the market rate of interest and the contractual rate of interest determines whether bonds are issued at par, a discount, or a premium.

**4.** **d.** The adjusting entry to accrue bond interest at December 31 includes a debit to Interest Expense and credit to Interest Payable. The other choices are therefore incorrect.

**5.** **b.** The entry to record the retirement of bonds will include a debit to Bonds Payable of $100,000, a debit to Premium on Bonds Payable of $3,745 ($103,745 − $100,000), a credit to Cash of $105,000 ($100,000 × 1.05) and a debit to Loss on Bond Redemption of $1,255 ($105,000 − $103,745). The other choices are therefore incorrect.

**6.** **c.** Howard Corporation reports the reduction in principal for the next year as a current liability, and it classifies the remaining unpaid principal balance as a long-term liability. The other choices are therefore incorrect.

**7.** **c.** In the first year, Andrews will recognize $49,700 of interest expense ($497,000 × 10%). After the first payment is made, the amount remaining on the note will be $346,700 [$497,000 principal − ($200,000 payment − $49,700 interest)]. The remaining balance ($346,700) is multiplied by the interest rate (10%) to compute the interest expense to be recognized for the second year, $34,670 ($346,700 × 10%), not (a) $16,567, (b) $49,700, or (d) $346,700.

**8.** **d.** Times interest earned = Net income + Interest expense + Income tax expense ($300,000 + $40,000 + $100,000 = $440,000) divided by Interest expense ($40,000), which equals 11 times, not (a) 3, (b) 4.4, or (c) 7.5 times.

*__9.__ **c.** [$500,000 − (96% × $500,000)] = $20,000; $20,000 ÷ 5 = $4,000 of discount to amortize annually. As a result, the entry would involve a credit to Discount on Bonds Payable $4,000. The other choices are therefore incorrect.

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*10. **a.** The carrying value of bonds increases by the amount of the periodic discount amortization. Discount amortization using the straight-line method is $4,000 each period. Total discount amortization for three periods is $12,000 ($4,000 × 3 periods) which is added to the initial carrying value ($480,000) to arrive at $492,000, the carrying value at the end of the third interest period, not (b) $488,000, (c) $486,000, or (d) $464,000.

*11. **b.** The beginning balance of unamortized discount is $61,446 ($1,000,000 − $938,554). The discount amortization is $3,855, the difference between the cash interest payment of $90,000 ($1,000,000 × 9%) and the interest expense recorded of $93,855 ($938,554 × 10%). This discount amortization ($3,855) is then subtracted from the beginning balance of unamortized discount ($61,446), to arrive at a balance of $57,591 at the end of the first year, not (a) $54,900, (c) $51,610, or (d) $51,000.

*12. **c.** The debit to Interest Expense = $1,072,096 (initial carrying value of bond) × 12% (market rate) = $128,652, not (a) $120,000, (b) $125,581, or (d) $140,000.

## Practice Brief Exercises

*Prepare entries for bonds issued at face value.*

**1. (LO 2)** Kahnle Corporation issued 3,000, 7%, 5-year, $1,000 bonds dated January 1, 2020, at 100. Interest is paid each January 1. (a) Prepare the journal entry to record the sale of these bonds on January 1, 2020. (b) Prepare the adjusting journal entry on December 31, 2020, to record interest expense. (c) Prepare the journal entry on January 1, 2021, to record interest paid.

### Solution

| | | | | |
|---|---|---|---|---|
| 1. **a.** Jan. 1 | Cash | | 3,000,000 | |
| | Bonds Payable (3,000 × $1,000) | | | 3,000,000 |
| **b.** Dec. 31 | Interest Expense | | 210,000 | |
| | Interest Payable ($3,000,000 × 7%) | | | 210,000 |
| **c.** Jan. 1 | Interest Payable | | 210,000 | |
| | Cash ($3,000,000 × 7%) | | | 210,000 |

*Prepare entries for long-term notes payable.*

**2. (LO 3)** Tyler-Danish Inc. issues a $600,000, 10%, 10-year mortgage note on December 31, 2020, to obtain financing for a new building. The terms provide for annual installment payments of $97,647, Prepare the entry to record the mortgage loan on December 31, 2020, and the first installment payment.

### Solution

2.

| Semiannual Interest Period | (A) Cash Payment | (B) Interest Expense (D) × 10% | (C) Reduction of Principal (A) − (B) | (D) Principal Balance (D) − (C) |
|---|---|---|---|---|
| Issue Date | | | | $600,000 |
| 1 | $97,647 | $60,000 | $37,647 | 562,353 |

| | | | |
|---|---|---|---|
| Dec. 31 | Cash | 600,000 | |
| | Mortgage Payable | | 600,000 |
| June 30 | Interest Expense | 60,000 | |
| | Mortgage Payable | 37,647 | |
| | Cash | | 97,647 |

*Prepare statement presentation of long-term liabilities.*

**3. (LO 4)** **Financial Statement** Presented below are liability items for Rymer Company at December 31, 2020. Prepare the long-term liabilities section of the balance sheet for Rymer Company.

| | |
|---|---|
| Bonds payable, due 2022 | $700,000 |
| Accounts Payable | 100,000 |
| Lease liability | 120,000 |
| Notes payable, due 2025 | 110,000 |
| Premium on bonds payable | 40,000 |

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### Solution

**3.** Long-term liabilities*

| | | |
|---|---|---|
| Bonds payable, due 2022 | $700,000 | |
| Plus: Premium on bonds payable | 40,000 | $740,000 |
| Notes payable, due 2025 | | 110,000 |
| Lease liability | | 120,000 |
| Total long-term liabilities | | $970,000 |

*Accounts Payable is a current liability

## Practice Exercises

**1. (LO 2)** North Airlines Company issued $900,000 of 8%, 10-year bonds on January 1, 2020, at face value. Interest is payable annually on January 1.

*Prepare entries for bonds issued at face value.*

### Instructions

Prepare the journal entries to record the following events.

**a.** The issuance of the bonds.

**b.** The accrual of interest on December 31.

**c.** The payment of interest on January 1, 2021.

**d.** The redemption of bonds at maturity, assuming interest for the last interest period has been paid and recorded.

### Solution

**1. a.** **January 1, 2020**

| | | |
|---|---|---|
| Cash | 900,000 | |
| Bonds Payable | | 900,000 |

**b.** **December 31, 2020**

| | | |
|---|---|---|
| Interest Expense | 72,000 | |
| Interest Payable ($900,000 × 8%) | | 72,000 |

**c.** **January 1, 2021**

| | | |
|---|---|---|
| Interest Payable | 72,000 | |
| Cash | | 72,000 |

**d.** **January 1, 2030**

| | | |
|---|---|---|
| Bonds Payable | 900,000 | |
| Cash | | 900,000 |

**2. (LO 2)** Hollenbeck Company issued $3,000,000 of bonds on January 1, 2020.

*Prepare entries for issuance, retirement, and conversion of bonds.*

### Instructions

**a.** Prepare the journal entry to record the issuance of the bonds if they are issued at (1) 100, (2) 98, and (3) 103.

**b.** Prepare the journal entry to record the retirement of the bonds at maturity, assuming the bonds were issued at 100.

**c.** Prepare the journal entry to record the retirement of the bonds before maturity at 98. Assume the balance in Premium on Bonds Payable is $18,000.

### Solution

**At 100**

**2. a. 1.**

| | | |
|---|---|---|
| Cash ($3,000,000 × 100%) | 3,000,000 | |
| Bonds Payable | | 3,000,000 |

**At 98**

**2.**

| | | |
|---|---|---|
| Cash ($3,000,000 × 98%) | 2,940,000 | |
| Discount on Bonds Payable | 60,000 | |
| Bonds Payable | | 3,000,000 |

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**At 103**

| | | | |
|---|---|---|---|
| **3.** | Cash ($3,000,000 × 103%) | 3,090,000 | |
| | Bonds Payable | | 3,000,000 |
| | Premium on Bonds Payable | | 90,000 |
| **b.** | Bonds Payable | 3,000,000 | |
| | Cash | | 3,000,000 |
| **c.** | Bonds Payable | 3,000,000 | |
| | Premium on Bonds Payable | 18,000 | |
| | Cash ($3,000,000 × 98%) | | 2,940,000 |
| | Gain on Bond Redemption | | 78,000 |

*Prepare entries to record mortgage note and installment payments.*

**3. (LO 3)** Clipper Company borrowed $500,000 on December 31, 2020, by issuing a $500,000, 7% mortgage note payable. The terms call for annual installment payments of $80,000 on December 31.

### Instructions

**a.** Prepare the journal entries to record the mortgage loan and the first two installment payments.

**b.** Indicate the amount of mortgage note payable to be reported as a current liability and as a long-term liability at December 31, 2021.

### Solution

**3. a.**

| | | | |
|---|---|---|---|
| | **December 31, 2020** | | |
| | Cash | 500,000 | |
| | Mortgage Payable | | 500,000 |
| | **December 31, 2021** | | |
| | Interest Expense ($500,000 × 7%) | 35,000 | |
| | Mortgage Payable | 45,000 | |
| | Cash | | 80,000 |
| | **December 31, 2022** | | |
| | Interest Expense [($500,000 − $45,000) × 7%] | 31,850 | |
| | Mortgage Payable | 48,150 | |
| | Cash | | 80,000 |

**b.** Current: $48,150
Long-term: $406,850 ($500,000 − $45,000 − $48,150)

## Practice Problem

*Prepare entries to record issuance of bonds and long-term notes, interest accrual, and bond redemption.*

**(LO 1, 2, 3)** Snyder Software Inc. has successfully developed a new spreadsheet program. To produce and market the program, the company needed $1.9 million of additional financing. On January 1, 2020, Snyder borrowed money as follows.

1. Snyder issued $1 million, 10%, 10-year bonds at face value. Interest is payable on January 1.
2. Snyder also issued a $400,000, 6%, 15-year mortgage payable. The terms provide for annual installment payments of $41,185 on December 31.

### Instructions

1. For the 10-year, 10% bonds:
   - **a.** Journalize the issuance of the bonds on January 1, 2020.
   - **b.** Prepare the journal entry for interest expense in 2020.
   - **c.** Prepare the entry for the redemption of the bonds at 101 on January 1, 2023, after paying the interest due on this date.
2. For the mortgage payable:
   - **a.** Prepare the entry for the issuance of the note on January 1, 2020.
   - **b.** Prepare a payment schedule for the first four installment payments.
   - **c.** Indicate the current and noncurrent amounts for the mortgage payable at December 31, 2020.

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### Solution

**1. a. 2020**

| | | | | |
|---|---|---|---|---|
| Jan. | 1 | Cash | 1,000,000 | |
| | | Bonds Payable | | 1,000,000 |
| | | (To record issuance of bonds) | | |

**b. 2020**

| | | | | |
|---|---|---|---|---|
| Dec. | 31 | Interest Expense | 100,000 | |
| | | Interest Payable ($1,000,000 × 10%) | | 100,000 |
| | | (To record accrual of annual interest) | | |

**c. 2023**

| | | | | |
|---|---|---|---|---|
| Jan. | 1 | Bonds Payable | 1,000,000 | |
| | | Loss on Bond Redemption | 10,000* | |
| | | Cash | | 1,010,000 |
| | | (To record redemption of bonds at 101) | | |

*($1,010,000 – $1,000,000)

**2. a. 2020**

| | | | | |
|---|---|---|---|---|
| Jan. | 1 | Cash | 400,000 | |
| | | Mortgage Payable | | 400,000 |
| | | (To record issuance of mortgage payable) | | |

**b.**

| Interest Period | Cash Payment | Interest Expense | Reduction of Principal | Principal Balance |
|---|---|---|---|---|
| Issue date | | | | $400,000 |
| 1 | $41,185 | $24,000 | $17,185 | 382,815 |
| 2 | 41,185 | 22,969 | 18,216 | 364,599 |
| 3 | 41,185 | 21,876 | 19,309 | 345,290 |
| 4 | 41,185 | 20,717 | 20,468 | 324,822 |

**c.** Current liability: $18,216
Long-term liability: $364,599

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendices to the chapter.

## Questions

**1.** (a) What are long-term liabilities? Give three examples. (b) What is a bond?

**2.** Contrast the following types of bonds: (a) secured and unsecured, and (b) convertible and callable.

**3.** The following terms are important in issuing bonds: (a) face value, (b) contractual interest rate, (c) bond indenture, and (d) bond certificate. Explain each of these terms.

**4.** Describe the two major obligations incurred by a company when bonds are issued.

**5.** Assume that Remington Inc. sold bonds with a face value of $100,000 for $104,000. Was the market interest rate equal to, less than, or greater than the bonds' contractual interest rate? Explain.

**6.** If a 7%, 10-year, $800,000 bond is issued at face value and interest is paid annually, what is the amount of the interest payment at the end of the first year period?

**7.** If the Bonds Payable account has a balance of $900,000 and the Discount on Bonds Payable account has a balance of $120,000, what is the carrying value of the bonds?

**8.** Which accounts are debited and which are credited if a bond issue originally sold at a premium is redeemed before maturity at 97 immediately following the payment of interest?

**9.** Rattigan Corporation is considering issuing a convertible bond. What is a convertible bond? Discuss the advantages of a convertible bond from the standpoint of (a) the bondholders and (b) the issuing corporation.

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**10.** Rob Grier, a friend of yours, has recently purchased a home for $125,000, paying $25,000 down and the remainder financed by a 10.5%, 20-year mortgage, payable at $998.38 per month. At the end of the first month, Rob receives a statement from the bank indicating that only $123.38 of principal was paid during the month. At this rate, he calculates that it will take over 67 years to pay off the mortgage. Is he right? Discuss.

**11.** In general, what are the requirements for the financial statement presentation of long-term liabilities?

**12.** (a) As a source of long-term financing, what are the major advantages of bonds over common stock? (b) What are the major disadvantages in using bonds for long-term financing?

**13.** (a) What is a lease agreement? (b) What are the two common types of leases?

**14.** Benedict Company entered into an agreement to lease 12 computers from Haley Electronics, Inc. The present value of the lease payments is $186,300. Assuming that this is a finance lease, what entry would Benedict Company make on the date of the lease agreement?

**15.** Did **Apple** redeem any of its debt during the fiscal year ended September 26, 2015? (*Hint:* Examine Apple's statement of cash flows.)

***16.** Explain the straight-line method of amortizing discount and premium on bonds payable.

***17.** DeWeese Corporation issues $400,000 of 8%, 5-year bonds on January 1, 2020, at 105. Assuming that the straight-line method is used to amortize the premium, what is the total amount of interest expense for 2020?

***18.** Kelli Deane is discussing the advantages of the effective-interest method of bond amortization with her accounting staff. What do you think Kelli is saying?

***19.** Windsor Corporation issues $500,000 of 9%, 5-year bonds on January 1, 2020, at 104. If Windsor uses the effective-interest method in amortizing the premium, will the annual interest expense increase or decrease over the life of the bonds? Explain.

## Brief Exercises

*Prepare entry for bonds issued.*

**BE15.1 (LO 2)** Randle Inc. issues $300,000, 10-year, 8% bonds at 98. Prepare the journal entry to record the sale of these bonds on March 1, 2020.

*Prepare entry for bonds issued.*

**BE15.2 (LO 2)** Price Company issues $400,000, 20-year, 7% bonds at 101. Prepare the journal entry to record the sale of these bonds on June 1, 2020.

*Prepare entries for bonds issued at face value.*

**BE15.3 (LO 2)** Meera Corporation issued 4,000, 8%, 5-year, $1,000 bonds dated January 1, 2020, at 100. Interest is paid each January 1.

**a.** Prepare the journal entry to record the sale of these bonds on January 1, 2020.

**b.** Prepare the adjusting journal entry on December 31, 2020, to record interest expense.

**c.** Prepare the journal entry on January 1, 2021, to record interest paid.

*Prepare entries for bonds sold at a discount and a premium.*

**BE15.4 (LO 2)** Nasreen Company issues $2 million, 10-year, 8% bonds at 97, with interest payable each January 1.

**a.** Prepare the journal entry to record the sale of these bonds on January 1, 2020.

**b.** Assuming instead that the above bonds sold for 104, prepare the journal entry to record the sale of these bonds on January 1, 2020.

*Prepare entries for bonds issued.*

**BE15.5 (LO 2)** Frankum Company has issued three different bonds during 2020. Interest is payable annually on each of these bonds.

**1.** On January 1, 2020, 1,000, 8%, 5-year, $1,000 bonds dated January 1, 2020, were issued at face value.

**2.** On July 1, $900,000, 9%, 5-year bonds dated July 1, 2020, were issued at 102.

**3.** On September 1, $400,000, 7%, 5-year bonds dated September 1, 2020, were issued at 98.

Prepare the journal entry to record each bond transaction at the date of issuance.

*Prepare entry for redemption of bonds.*

**BE15.6 (LO 2)** The balance sheet for Miley Consulting reports the following information on July 1, 2020.

| | | |
|---|---|---|
| Long-term liabilities | | |
| Bonds payable | $1,000,000 | |
| Less: Discount on bonds payable | 60,000 | $940,000 |

Miley decides to redeem these bonds at 101 after paying annual interest. Prepare the journal entry to record the redemption on July 1, 2020.

*Prepare entries for long-term notes payable.*

**BE15.7 (LO 3)** Hanschu Inc. issues an $800,000, 10%, 10-year mortgage note on December 31, 2020, to obtain financing for a new building. The terms provide for annual installment payments of $130,196. Prepare the entry to record the mortgage loan on December 31, 2020, and the first installment payment on December 31, 2021.

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**BE15.8 (LO 4)** **Financial Statement** Presented below are long-term liability items for Lind Company at December 31, 2020. Prepare the long-term liabilities section of the balance sheet for Lind Company.

*Prepare statement presentation of long-term liabilities.*

| | |
|---|---|
| Bonds payable, due 2022 | $600,000 |
| Lease liability | 70,000 |
| Notes payable, due 2025 | 80,000 |
| Discount on bonds payable | 45,000 |

**BE15.9 (LO 4)** Suppose the 2020 **adidas** financial statements contain the following selected data (in millions).

*Analyze solvency.*

| | | | |
|---|---|---|---|
| Current assets | $4,485 | Cash | $775 |
| Total assets | 8,875 | Interest expense | 169 |
| Current liabilities | 2,836 | Income taxes | 113 |
| Total liabilities | 5,099 | Net income | 245 |

Compute the following values and provide a brief interpretation of each.

**a.** Debt to assets ratio.

**b.** Times interest earned.

**BE15.10 (LO 4)** Moby Inc. is considering two alternatives to finance its construction of a new $2 million plant.

*Compare bond versus stock financing.*

**a.** Issuance of 200,000 shares of common stock at the market price of $10 per share.

**b.** Issuance of $2 million, 8% bonds at face value.

Complete the following table, and indicate which alternative is preferable.

| | Issue Stock | Issue Bond |
|---|---|---|
| Income before interest and taxes | $700,000 | $700,000 |
| Interest expense from bonds | _____ | _____ |
| Income before income taxes | | |
| Income tax expense (30%) | _____ | _____ |
| Net income | $ | $ |
| Outstanding shares | | 500,000 |
| Earnings per share | _____ | _____ |

**BE15.11 (LO 4)** Imhoff Company leases a new building from Noble Construction, Inc. The present value of the lease payments is $700,000. The lease is a finance lease. Prepare the journal entry that the lessee should make to record this transaction.

*Account for finance lease.*

***BE15.12 (LO 5)** Sweetwood Company issues $5 million, 10-year, 9% bonds at 96, with interest payable annually on January 1. The straight-line method is used to amortize bond discount.

*Prepare entries for bonds issued at a discount.*

**a.** Prepare the journal entry to record the sale of these bonds on January 1, 2020.

**b.** Prepare the adjusting journal entry to record interest expense and bond discount amortization on December 31, 2020.

***BE15.13 (LO 5)** Golden Inc. issues $4 million, 5-year, 10% bonds at 102, with interest payable annually on January 1. The straight-line method is used to amortize bond premium.

*Prepare entries for bonds issued at a premium.*

**a.** Prepare the journal entry to record the sale of these bonds on January 1, 2020.

**b.** Prepare the adjusting journal entry to record interest expense and bond premium amortization on December 31, 2020.

***BE15.14 (LO 2, 6)** **Writing** Presented below is the partial bond discount amortization schedule for Gomez Corp. Gomez uses the effective-interest method of amortization.

*Use effective-interest method of bond amortization.*

| Interest Periods | Interest to Be Paid | Interest Expense to Be Recorded | Discount Amortization | Unamortized Discount | Bond Carrying Value |
|---|---|---|---|---|---|
| Issue date | | | | $38,609 | $961,391 |
| 1 | $45,000 | $48,070 | $3,070 | 35,539 | 964,461 |
| 2 | 45,000 | 48,223 | 3,223 | 32,316 | 967,684 |

**a.** Prepare the journal entry to record the payment of interest and the discount amortization at the end of period 1.

**b.** Explain why interest expense is greater than interest paid.

**c.** Explain why interest expense will increase each period.

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## DO IT! Exercises

*Evaluate statements about bonds.*

**DO IT! 15.1 (LO 1)** State whether each of the following statements is true or false. If false, indicate how to correct the statement.

_____ **1.** Mortgage bonds and sinking fund bonds are both examples of debenture bonds.

_____ **2.** Convertible bonds are also known as callable bonds.

_____ **3.** The market rate is the rate investors demand for loaning funds.

_____ **4.** Annual interest on bonds is equal to the face value times the stated rate.

_____ **5.** The present value of a bond is the value at which it should sell in the market.

*Prepare journal entry for bond issuance and show balance sheet presentation.*

**DO IT! 15.2a (LO 2)** **Financial Statement** Eubank Corporation issues $500,000 of bonds for $520,000. (a) Prepare the journal entry to record the issuance of the bonds, and (b) show how the bonds would be reported on the balance sheet at the date of issuance.

*Prepare entry for bond redemption.*

**DO IT! 15.2b (LO 2)** Prater Corporation issued $400,000 of 10-year bonds at a discount. Prior to maturity, when the carrying value of the bonds was $390,000, the company redeemed the bonds at 99. Prepare the entry to record the redemption of the bonds.

*Prepare entries for mortgage note and installment payment on note.*

**DO IT! 15.3 (LO 3)** Detwiler Orchard issues a $700,000, 6%, 15-year mortgage note to obtain needed financing for a new lab. The terms call for annual payments of $72,074 each. Prepare the entries to record the mortgage loan and the first installment payment.

*Prepare entry for lease, and compute debt to assets ratio.*

**DO IT! 15.4 (LO 4)** Huebner Corporation leases new equipment for 10 years on December 31, 2020. The present value of the lease payments is $192,000. After recording this lease, Huebner has assets of $1,800,000, liabilities of $1,100,000, and stockholders' equity of $700,000. (a) Prepare the entry to record the lease, and (b) compute and discuss the debt to assets ratio at year-end.

## Exercises

*Evaluate statements about bonds.*

**E15.1 (LO 1)** Nick Bosch has prepared the following list of statements about bonds.

1. Bonds are a form of interest-bearing notes payable.
2. Secured bonds have specific assets of the issuer pledged as collateral for the bonds.
3. Secured bonds are also known as debenture bonds.
4. A conversion feature may be added to bonds to make them more attractive to bond buyers.
5. The rate used to determine the amount of cash interest the borrower pays is called the stated rate.
6. Bond prices are usually quoted as a percentage of the face value of the bond.
7. The present value of a bond is the value at which it should sell in the marketplace.

**Instructions**

Identify each statement as true or false. If false, indicate how to correct the statement.

*Prepare entries for issuance of bonds, and payment and accrual of bond interest.*

**E15.2 (LO 2)** On January 1, 2020, Klosterman Company issued $500,000, 10%, 10-year bonds at face value. Interest is payable annually on January 1.

**Instructions**

Prepare journal entries to record the following.

**a.** The issuance of the bonds.

**b.** The accrual of interest on December 31, 2020.

**c.** The payment of interest on January 1, 2021.

*Prepare entries for bonds issued at face value.*

**E15.3 (LO 2)** On January 1, 2020, Forrester Company issued $400,000, 8%, 5-year bonds at face value. Interest is payable annually on January 1.

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**Instructions**

Prepare journal entries to record the following.

**a.** The issuance of the bonds.

**b.** The accrual of interest on December 31, 2020.

**c.** The payment of interest on January 1, 2021.

**E15.4 (LO 2)** Laudie Company issued $400,000 of 9%, 10-year bonds on January 1, 2020, at face value. Interest is payable annually on January 1, 2021.

*Prepare entries for bonds issued at face value.*

**Instructions**

Prepare the journal entries to record the following events.

**a.** The issuance of the bonds.

**b.** The accrual of interest on December 31, 2020.

**c.** The payment of interest on January 1, 2021.

**d.** The redemption of bonds at maturity, assuming interest for the last interest period has been paid and recorded.

**E15.5 (LO 2)** Swisher Company issued $2,000,000 of bonds on January 1, 2020.

*Prepare entries for issuance and redemption of bonds.*

**Instructions**

**a.** Prepare the journal entry to record the issuance of the bonds if they are issued at (1) 100, (2) 98, and (3) 103.

**b.** Prepare the journal entry to record the redemption of the bonds at maturity, assuming the bonds were issued at 100.

**c.** Prepare the journal entry to record the redemption of the bonds before maturity at 98. Assume the balance in Premium on Bonds Payable is $9,000.

**E15.6 (LO 2)** Whitmore Company issued $500,000 of 5-year, 8% bonds at 97 on January 1, 2020. The bonds pay interest annually.

*Prepare entries to record issuance of bonds at discount and premium.*

**Instructions**

**a. 1.** Prepare the journal entry to record the issuance of the bonds.

**2.** Compute the total cost of borrowing for these bonds.

**b.** Repeat the requirements from part (a), assuming the bonds were issued at 105.

**E15.7 (LO 2)** The following section is taken from Ohlman Corp.'s balance sheet at December 31, 2019.

*Prepare entries for bond interest and redemption.*

| | |
|---|---|
| Current liabilities | |
| Interest payable | $ 112,000 |
| Long-term liabilities | |
| Bonds payable, 7%, due January 1, 2024 | 1,600,000 |

Bond interest is payable annually on January 1. The bonds are callable on any interest date.

**Instructions**

**a.** Journalize the payment of the bond interest on January 1, 2020.

**b.** Assume that on January 1, 2020, after paying interest, Ohlman calls bonds having a face value of $600,000. The call price is 103. Record the redemption of the bonds.

**c.** Prepare the entry to record the accrual of interest on December 31, 2020.

**E15.8 (LO 2)** The following are two independent situations.

*Prepare entries for redemption of bonds.*

**1.** Longbine Corporation redeemed $130,000 face value, 12% bonds on June 30, 2020, at 102. The carrying value of the bonds at the redemption date was $117,500. The bonds pay annual interest, and the interest payment due on June 30, 2020, has been made and recorded.

**2.** Tastove Inc. redeemed $150,000 face value, 12.5% bonds on June 30, 2020, at 98. The carrying value of the bonds at the redemption date was $151,000. The bonds pay annual interest, and the interest payment due on June 30, 2020, has been made and recorded.

**Instructions**

For each independent situation above, prepare the appropriate journal entry for the redemption of the bonds.

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*Prepare entries to record mortgage note and payments.*

**E15.9 (LO 3)** Jernigan Co. receives $300,000 when it issues a $300,000, 10%, mortgage note payable to finance the construction of a building at December 31, 2020. The terms provide for annual installment payments of $50,000 on December 31.

**Instructions**

Prepare the journal entries to record the mortgage loan and the first two payments.

*Prepare entries to record mortgage note and installment payments.*

**E15.10 (LO 3)** Dreiling Company borrowed $300,000 on January 1, 2020, by issuing a $300,000, 8% mortgage note payable. The terms call for annual installment payments of $40,000 on December 31.

**Instructions**

**a.** Prepare the journal entries to record the mortgage loan and the first two installment payments.

**b.** Indicate the amount of mortgage note payable to be reported as a current liability and as a long-term liability at December 31, 2020.

*Prepare long-term liabilities section.*

**E15.11 (LO 4)** **Financial Statement** The adjusted trial balance for Karr Farm Corporation at the end of the current year contained the following accounts.

| | |
|---|---|
| Interest Payable | $ 9,000 |
| Lease Liability | 89,500 |
| Bonds Payable, due 2025 | 180,000 |
| Premium on Bonds Payable | 32,000 |

**Instructions**

Prepare the long-term liabilities section of the balance sheet.

*Compare two alternatives of financing—issuance of common stock vs. issuance of bonds.*

**E15.12 (LO 4)** Gilliland Airlines is considering two alternatives for the financing of a purchase of a fleet of airplanes. These two alternatives are:

1. Issue 90,000 shares of common stock at $30 per share. (Cash dividends have not been paid nor is the payment of any contemplated.)
2. Issue 10%, 10-year bonds at face value for $2,700,000.

It is estimated that the company will earn $800,000 before interest and taxes as a result of this purchase. The company has an estimated tax rate of 30% and has 120,000 shares of common stock outstanding prior to the new financing.

**Instructions**

Determine the effect on net income and earnings per share for these two methods of financing.

*Compute debt to assets ratio and times interest earned.*

**E15.13 (LO 4)** Hatfield Corporation reports the following amounts in its 2020 financial statements:

| | At December 31, 2020 | For the Year 2020 |
|---|---|---|
| Total assets | $1,000,000 | |
| Total liabilities | 580,000 | |
| Total stockholders' equity | ? | |
| Interest expense | | $ 20,000 |
| Income tax expense | | 100,000 |
| Net income | | 150,000 |

**Instructions**

**a.** Compute the December 31, 2020, balance in stockholders' equity.

**b.** Compute the debt to assets ratio at December 31, 2020.

**c.** Compute times interest earned for 2020.

*Prepare entries for finance lease.*

**E15.14 (LO 4)** On January 1, 2020, Throm Inc. entered into an agreement to lease 20 computers from Drummond Electronics. The terms of the lease agreement require three annual rental payments of $20,000 (including 10% interest) beginning December 31, 2020. The present value of the three rental payments is $49,735. Throm considers this a finance lease.

**Instructions**

Prepare the journal entry to record the lease agreement on the books of Throm Inc. on January 1, 2020.

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*E15.15 (LO 5) Adcock Company issued $600,000, 9%, 20-year bonds on January 1, 2020, at 103. Interest is payable annually on January 1. Adcock uses straight-line amortization for bond premium or discount.

*Prepare entries to record issuance of bonds, payment of interest, amortization of premium, and redemption at maturity.*

**Instructions**

Prepare the journal entries to record the following.

**a.** The issuance of the bonds.

**b.** The accrual of interest and the premium amortization on December 31, 2020.

**c.** The payment of interest on January 1, 2021.

**d.** The redemption of the bonds at maturity, assuming interest for the last interest period has been paid and recorded.

*E15.16 (LO 5) Gridley Company issued $800,000, 11%, 10-year bonds on December 31, 2019, for $730,000. Interest is payable annually on December 31. Gridley Company uses the straight-line method to amortize bond premium or discount.

*Prepare entries to record issuance of bonds, payment of interest, amortization of discount, and redemption at maturity.*

**Instructions**

Prepare the journal entries to record the following.

**a.** The issuance of the bonds.

**b.** The payment of interest and the discount amortization on December 31, 2020.

**c.** The redemption of the bonds at maturity, assuming interest for the last interest period has been paid and recorded.

*E15.17 (LO 6) Lorance Corporation issued $400,000, 7%, 20-year bonds on January 1, 2020, for $360,727. This price resulted in an effective-interest rate of 8% on the bonds. Interest is payable annually on January 1. Lorance uses the effective-interest method to amortize bond premium or discount.

*Prepare entries for issuance of bonds, payment of interest, and amortization of discount using effective-interest method.*

**Instructions**

Prepare the journal entries to record the following. (Round to the nearest dollar.)

**a.** The issuance of the bonds.

**b.** The accrual of interest and the discount amortization on December 31, 2020.

**c.** The payment of interest on January 1, 2021.

*E15.18 (LO 6) LRNA Company issued $380,000, 7%, 10-year bonds on January 1, 2020, for $407,968. This price resulted in an effective-interest rate of 6% on the bonds. Interest is payable annually on January 1. LRNA uses the effective-interest method to amortize bond premium or discount.

*Prepare entries for issuance of bonds, payment of interest, and amortization of premium using effective-interest method.*

**Instructions**

Prepare the journal entries to record the following. (Round to the nearest dollar.)

**a.** The issuance of the bonds.

**b.** The accrual of interest and the premium amortization on December 31, 2020.

**c.** The payment of interest on January 1, 2021.

## Problems: Set A

P15.1A (LO 2, 4) Financial Statement On May 1, 2020, Herron Corp. issued $600,000, 9%, 5-year bonds at face value. The bonds were dated May 1, 2020, and pay interest annually on May 1. Financial statements are prepared annually on December 31.

*Prepare entries to record issuance of bonds, interest accrual, and bond redemption.*

**Instructions**

**a.** Prepare the journal entry to record the issuance of the bonds.

**b.** Prepare the adjusting entry to record the accrual of interest on December 31, 2020.

**c.** Show the balance sheet presentation on December 31, 2020.

**d.** Prepare the journal entry to record payment of interest on May 1, 2021.

d. Int. exp. $18,000

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**e.** Prepare the adjusting entry to record the accrual of interest on December 31, 2021.

**f.** Assume that on January 1, 2022, Herron pays the accrued bond interest and calls the bonds. The call price is 102. Record the payment of interest and redemption of the bonds.

*Prepare entries to record issuance of bonds, interest accrual, and bond redemption.*

**P15.2A (LO 2, 4)** **Financial Statement** Kershaw Electric sold $6,000,000, 10%, 10-year bonds on January 1, 2020. The bonds were dated January 1, 2020, and paid interest on January 1. The bonds were sold at 98.

### Instructions

**a.** Prepare the journal entry to record the issuance of the bonds on January 1, 2020.

**b.** At December 31, 2020, $8,000 of the Discount on Bonds Payable account has been amortized. Show the balance sheet presentation of the long-term liability at December 31, 2020.

c. Loss $224,000

**c.** On January 1, 2022, when the carrying value of the bonds was $5,896,000, the company redeemed the bonds at 102. Record the redemption of the bonds assuming that interest for the period has already been paid.

*Prepare entries for interest payment, bond redemption, and interest accrual.*

**P15.3A (LO 2)** The following section is taken from Mareska's balance sheet at December 31, 2020.

| | |
|---|---|
| Current liabilities | |
| Interest payable | $ 40,000 |
| Long-term liabilities | |
| Bonds payable (8%, due January 1, 2024) | 500,000 |

Interest is payable annually on January 1. The bonds are callable on any annual interest date.

### Instructions

**a.** Journalize the payment of the bond interest on January 1, 2021.

**b.** Assume that on January 1, 2021, after paying interest, Mareska calls bonds having a face value of $200,000. The call price is 103. Record the redemption of the bonds.

**c.** Prepare the adjusting entry on December 31, 2021, to accrue the interest on the remaining bonds.

*Prepare installment payments schedule and journal entries for a mortgage note payable.*

**P15.4A (LO 3, 4)** **Financial Statement** Talkington Electronics issues a $400,000, 8%, 15-year mortgage note on December 31, 2019. The proceeds from the note are to be used in financing a new research laboratory. The terms of the note provide for annual installment payments, exclusive of real estate taxes and insurance, of $59,612. Payments are due on December 31.

### Instructions

**a.** Prepare an installment payments schedule for the first 4 years.

b. December 31 debit Mortgage Payable $27,612

**b.** Prepare the entries for (1) the loan and (2) the first installment payment.

c. Current liability—2020 $29,821

**c.** Show how the total mortgage liability should be reported on the balance sheet at December 31, 2020.

*Prepare entries to record issuance of bonds, interest accrual, and straight-line amortization for 2 years.*

***P15.5A (LO 4, 5)** **Financial Statement** Paris Electric sold $3,000,000, 10%, 10-year bonds on January 1, 2020. The bonds were dated January 1 and pay interest annually on January 1. Paris Electric uses the straight-line method to amortize bond premium or discount. The bonds were sold at 104.

### Instructions

**a.** Prepare the journal entry to record the issuance of the bonds on January 1, 2020.

b. Amortization $12,000

**b.** Prepare a bond premium amortization schedule for the first 4 interest periods.

**c.** Prepare the journal entries for interest and the amortization of the premium in 2020 and 2021.

d. Premium on bonds payable $96,000

**d.** Show the balance sheet presentation of the bond liability at December 31, 2021.

*Prepare entries to record issuance of bonds, interest, and straight-line amortization of bond premium and discount.*

***P15.6A (LO 4, 5)** **Financial Statement** Saberhagen Company sold $3,500,000, 8%, 10-year bonds on January 1, 2020. The bonds were dated January 1, 2020 and pay interest annually on

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January 1. Saberhagen Company uses the straight-line method to amortize bond premium or discount.

### Instructions

**a.** Prepare all the necessary journal entries to record the issuance of the bonds and bond interest expense for 2020, assuming that the bonds sold at 104.

**b.** Prepare journal entries as in part (a) assuming that the bonds sold at 98.

**c.** Show the balance sheet presentation for the bonds at December 31, 2020, for both the requirements in (a) and (b).

a. Amortization $14,000

b. Amortization $7,000

c. Premium on bonds payable $126,000
Discount on bonds payable $63,000

***P15.7A (LO 5)** The following is taken from the Colaw Company balance sheet.

*Prepare entries to record interest payments, straight-line premium amortization, and redemption of bonds.*

**Colaw Company**
**Balance Sheet (partial)**
**December 31, 2020**

| | | |
|---|---|---|
| Current liabilities | | |
| Interest payable (for 12 months from January 1 to December 31) | | $ 210,000 |
| Long-term liabilities | | |
| Bonds payable, 7% due January 1, 2031 | $3,000,000 | |
| Add: Premium on bonds payable | 200,000 | 3,200,000 |

Interest is payable annually on January 1. The bonds are callable on any annual interest date. Colaw uses straight-line amortization for any bond premium or discount. From December 31, 2020, the bonds will be outstanding for an additional 10 years (120 months).

### Instructions

**a.** Journalize the payment of bond interest on January 1, 2021.

**b.** Prepare the entry to amortize bond premium and to accrue the interest due on December 31, 2021.

b. Amortization $20,000

**c.** Assume that on January 1, 2022, after paying interest, Colaw Company calls bonds having a face value of $1,200,000. The call price is 101. Record the redemption of the bonds.

c. Gain $60,000

**d.** Prepare the adjusting entry at December 31, 2022, to amortize bond premium and to accrue interest on the remaining bonds.

d. Amortization $12,000

***P15.8A (LO 6)** On January 1, 2020, Lock Corporation issued $1,800,000 face value, 5%, 10-year bonds at $1,667,518. This price resulted in an effective-interest rate of 6% on the bonds. Lock uses the effective-interest method to amortize bond premium or discount. The bonds pay annual interest January 1.

*Prepare journal entries to record issuance of bonds, payment of interest, and amortization of bond discount using effective-interest method.*

Excel

### Instructions

(Round all computations to the nearest dollar.)

**a.** Prepare the journal entry to record the issuance of the bonds on January 1, 2020.

**b.** Prepare an amortization table through December 31, 2022 (three interest periods) for this bond issue.

**c.** Prepare the journal entry to record the accrual of interest and the amortization of the discount on December 31, 2020.

c. Interest Expense $100,051

**d.** Prepare the journal entry to record the payment of interest on January 1, 2021.

**e.** Prepare the journal entry to record the accrual of interest and the amortization of the discount on December 31, 2021.

***P15.9A (LO 4, 6)** Writing Financial Statement On January 1, 2020, Jade Company issued $2,000,000 face value, 7%, 10-year bonds at $2,147,202. This price resulted in a 6% effective-interest rate on the bonds. Jade uses the effective-interest method to amortize bond premium or discount. The bonds pay annual interest on each January 1.

*Prepare journal entries to record issuance of bonds, payment of interest, and effective-interest amortization, and balance sheet presentation.*

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**Instructions**

**a.** Prepare the journal entries to record the following transactions.

**1.** The issuance of the bonds on January 1, 2020.

**2.** Accrual of interest and amortization of the premium on December 31, 2020.

**3.** The payment of interest on January 1, 2021.

**4.** Accrual of interest and amortization of the premium on December 31, 2021.

a. 4. Interest Expense $128,162

**b.** Show the proper long-term liabilities balance sheet presentation for the liability for bonds payable at December 31, 2021.

**c.** Provide the answers to the following questions in narrative form.

**1.** What amount of interest expense is reported for 2021?

**2.** Would the bond interest expense reported in 2021 be the same as, greater than, or less than the amount that would be reported if the straight-line method of amortization were used?

## Continuing Case

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### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 14.)

**CC15** Natalie and Curtis have been experiencing great demand for their cookies and muffins. As a result, they are now thinking about buying a commercial oven. They know which oven they want and how much it will cost. They have some cash set aside for the purchase and will need to borrow the rest. They met with a bank manager to discuss their options.

*Go to* **WileyPLUS** *for complete case details and instructions.*

## Ethics Case

**EC15** Ken Iwig is the president, founder, and majority owner of Olathe Medical Corporation, an emerging medical technology products company. Olathe is in dire need of additional capital to keep operating and to bring several promising products to final development, testing, and production. Ken, as owner of 51% of the outstanding stock, manages the company's operations. He places heavy emphasis on research and development and on long-term growth. The other principal stockholder is Barb Lowery who, as a nonemployee investor, owns 40% of the stock. Barb would like to deemphasize the R&D functions and emphasize the marketing function, to maximize short-run sales and profits from existing products. She believes this strategy would raise the market price of Olathe's stock.

All of Ken's personal capital and borrowing power is tied up in his 51% stock ownership. He knows that any offering of additional shares of stock will dilute his controlling interest because he won't be able to participate in such an issuance. But, Barb has money and would likely buy enough shares to gain control of Olathe. She then would dictate the company's future direction, even if it meant replacing Ken as president and CEO.

The company already has considerable debt. Raising additional debt will be costly, will adversely affect Olathe's credit rating, and will increase the company's reported losses due to the growth in interest expense. Barb and the other minority stockholders express opposition to the assumption of additional debt, fearing the company will be pushed to the brink of bankruptcy. Wanting to maintain his control and to preserve the direction of "his" company, Ken is doing everything to avoid a stock issuance. He is contemplating a large issuance of bonds, even if it means the bonds are issued with a high effective-interest rate.

**Instructions**

**a.** Who are the stakeholders in this situation?

**b.** What are the ethical issues in this case?

**c.** What would you do if you were Ken?

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## Comprehensive Accounting Cycle Review

**ACR15** Quigley Corporation's trial balance at December 31, 2020, is presented below. All 2020 transactions have been recorded except for the items described below.

| | Debit | Credit |
|---|---|---|
| Cash | $ 25,500 | |
| Accounts Receivable | 51,000 | |
| Inventory | 22,700 | |
| Land | 65,000 | |
| Buildings | 95,000 | |
| Equipment | 40,000 | |
| Allowance for Doubtful Accounts | | $ 450 |
| Accumulated Depreciation—Buildings | | 30,000 |
| Accumulated Depreciation—Equipment | | 14,400 |
| Accounts Payable | | 19,300 |
| Interest Payable | | –0– |
| Dividends Payable | | –0– |
| Unearned Rent Revenue | | 8,000 |
| Bonds Payable (10%) | | 50,000 |
| Common Stock ($10 par) | | 30,000 |
| Paid-in Capital in Excess of Par—Common Stock | | 6,000 |
| Preferred Stock ($20 par) | | –0– |
| Paid-in Capital in Excess of Par—Preferred Stock | | –0– |
| Retained Earnings | | 75,050 |
| Treasury Stock | –0– | |
| Cash Dividends | –0– | |
| Sales Revenue | | 570,000 |
| Rent Revenue | | –0– |
| Bad Debt Expense | –0– | |
| Interest Expense | –0– | |
| Cost of Goods Sold | 400,000 | |
| Depreciation Expense | –0– | |
| Other Operating Expenses | 39,000 | |
| Salaries and Wages Expense | 65,000 | |
| Total | $803,200 | $803,200 |

Unrecorded transactions and adjustments:

1. On January 1, 2020, Quigley issued 1,000 shares of $20 par, 6% preferred stock for $22,000.
2. On January 1, 2020, Quigley also issued 1,000 shares of common stock for $23,000.
3. Quigley reacquired 300 shares of its common stock on July 1, 2020, for $49 per share.
4. On December 31, 2020, Quigley declared the annual cash dividend on the preferred stock and a $1.50 per share dividend on the outstanding common stock, all payable on January 15, 2021.
5. Quigley estimates that uncollectible accounts receivable at year-end is $5,100.
6. The building is being depreciated using the straight-line method over 30 years. The salvage value is $5,000.
7. The equipment is being depreciated using the straight-line method over 10 years. The salvage value is $4,000.
8. The unearned rent was collected on October 1, 2020. It was the receipt of 4 months' rent in advance (October 1, 2020 through January 31, 2021).
9. The 10% bonds payable pay interest every January 1. The interest for the 12 months ended December 31, 2020, has not been paid or recorded.

### Instructions

(Ignore income taxes.)

**a.** Prepare journal entries for the transactions and adjustment listed above.

**b.** Prepare an updated December 31, 2020, trial balance, reflecting the journal entries in (a).

b. Total $871,200

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**c.** Prepare a multiple-step income statement for the year ending December 31, 2020.

**d.** Prepare a retained earnings statement for the year ending December 31, 2020.

e. Total assets $273,400

**e.** Prepare a classified balance sheet as of December 31, 2020.

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT15.1** The financial statements of **Apple Inc.** are presented in Appendix A. The complete annual report, including the notes to the financial statements, is available at the company's website.

#### Instructions

**a.** What were Apple's total long-term liabilities at September 26, 2015? What was the increase/decrease in total long-term liabilities from the prior year?

**b.** Determine whether Apple redeemed (bought back) any long-term liabilities during the fiscal year ended September 26, 2015.

### Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT15.2** **PepsiCo**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

#### Instructions

**a.** Based on the information contained in these financial statements, compute the following 2015 ratios for each company.

**1.** Debt to assets.

**2.** Times interest earned.

**b.** What conclusions concerning the companies' long-run solvency can be drawn from these ratios?

### Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT15.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

#### Instructions

**a.** Based on the information contained in these financial statements, compute the following 2015 ratios for Amazon and 2016 ratios for Wal-Mart.

**1.** Debt to assets.

**2.** Times interest earned.

**b.** What conclusions concerning the companies' long-run solvency can be drawn from these ratios?

### Real-World Focus

**CT15.4** Bond or debt securities pay a stated rate of interest. This rate of interest is dependent on the risk associated with the investment. Also, bond prices change when the risks associated with those bonds change. **Standard & Poor**'s provides ratings for companies that issue debt securities.

#### Instructions

Go to the Standard & Poor's website and search for answers to the following questions.

**a.** Explain the meaning of an "A" rating. Explain the meaning of a "C" rating.

**b.** What types of things can cause a change in a company's credit rating?

**c.** Explain the relationship between a company's credit rating and the merit of an investment in that company's bonds.

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## Decision-Making Across the Organization

*CT15.5 On January 1, 2018, Glover Corporation issued $2,400,000 of 5-year, 8% bonds at 95. The bonds pay interest annually on January 1. By January 1, 2020, the market rate of interest for bonds of risk similar to those of Glover Corporation had risen. As a result, the market value of these bonds was $2,000,000 on January 1, 2020—below their carrying value. Joanna Glover, president of the company, suggests repurchasing all of these bonds in the open market at the $2,000,000 price. To do so, the company will have to issue $2,000,000 (face value) of new 10-year, 11% bonds at par. The president asks you, as controller, "What is the feasibility of my proposed repurchase plan?"

### Instructions

With the class divided into groups, answer the following.

**a.** What is the carrying value of the outstanding Glover Corporation 5-year bonds on January 1, 2020? (Assume straight-line amortization.)

**b.** Prepare the journal entry to redeem the 5-year bonds on January 1, 2020. Prepare the journal entry to issue the new 10-year bonds.

**c.** Prepare a short memo to the president in response to her request for advice. List the economic factors that you believe should be considered for her repurchase proposal.

## Communication Activity

CT15.6 Sam Masasi, president of Masasi Corporation, is considering the issuance of bonds to finance an expansion of his business. He has asked you to (1) discuss the advantages of bonds over common stock financing, (2) indicate the types of bonds he might issue, and (3) explain the issuing procedures used in bond transactions.

### Instructions

Write a memo to the president, answering his request.

## All About You

CT15.7 Numerous articles have been written that identify early warning signs that you might be getting into trouble with your personal debt load. You can find many good articles on this topic on the Internet.

### Instructions

Find an article that identifies early warning signs of personal debt trouble. Write a summary of the article and bring your summary and the article to class to share.

## FASB Codification Activity

CT15.8 If your school has a subscription to the FASB Codification, log in and prepare responses to the following:

**a.** What is the definition of long-term obligation?

**b.** What guidance does the Codification provide for the disclosure of long-term obligations?

# A Look at IFRS

**LEARNING OBJECTIVE 7**

Compare the accounting for long-term liabilities under GAAP and IFRS.

IFRS and GAAP have similar definitions of liabilities but have a different approach for accounting for certain long-term liabilities.

## Key Points

Following are the key similarities and difference between GAAP and IFRS as related to accounting for long-term liabilities.

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### Similarities

- As indicated in Chapter 11, in general GAAP and IFRS define liabilities similarly.
- IFRS requires that companies classify liabilities as current or noncurrent on the face of the statement of financial position (balance sheet), except in industries where a **presentation** based on liquidity would be considered to provide more useful information (such as financial institutions). When current liabilities (also called short-term liabilities) are presented, they are generally presented in order of liquidity.
- Under IFRS, liabilities are classified as current if they are expected to be paid within 12 months.
- Similar to GAAP, items are normally reported in order of liquidity. Companies sometimes show liabilities before assets. Also, they will sometimes show noncurrent (long-term) liabilities before current liabilities.
- The basic calculation for bond valuation is the same under GAAP and IFRS. In addition, the accounting for bond liability transactions is essentially the same between GAAP and IFRS.
- IFRS requires use of the effective-interest method for amortization of bond discounts and premiums. GAAP also requires the effective-interest method, except that it allows use of the straight-line method where the difference is not material. Under IFRS, companies do not use a premium or discount account but instead show the bond at its net amount. For example, if a $100,000 bond was issued at 97, under IFRS a company would record:

| | | |
|---|---|---|
| Cash | 97,000 | |
| Bonds Payable | | 97,000 |

### Differences

- Both Boards share the same objective of recording leases by lessees and lessors according to their economic substance—that is, according to the definitions of assets and liabilities. However, GAAP for leases is much more "rules-based" with specific criteria to determine if a lease arrangement is a finance or operating lease. IFRS is more conceptual in its provisions.
- Leases classified as operating leases under GAAP are accounted for differently under IFRS. Also, IFRS allows alternative measurement bases for right-of-use assets (e.g., the revaluation model).

### Looking to the Future

The FASB and IASB are currently involved in two projects, each of which has implications for the accounting for liabilities. One project is investigating approaches to differentiate between debt and equity instruments. The other project, the elements phase of the conceptual framework project, will evaluate the definitions of the fundamental building blocks of accounting. The results of these projects could change the classification of many debt and equity securities.

## IFRS Practice

### IFRS Self-Test Questions

1. The accounting for bonds payable is:
   **a.** essentially the same under IFRS and GAAP.
   **b.** differs in that GAAP requires use of the straight-line method for amortization of bond premium and discount.
   **c.** the same except that market prices may be different because the present value calculations are different between IFRS and GAAP.
   **d.** not covered by IFRS.
2. The leasing standards employed by IFRS:
   **a.** rely more heavily on interpretation of the conceptual meaning of assets and liabilities than GAAP.
   **b.** are more "rules based" than those of GAAP.
   **c.** employ the same "bright-line test" as GAAP.
   **d.** are identical to those of GAAP.
3. The joint projects of the FASB and IASB could potentially:
   **a.** change the definition of liabilities.
   **b.** change the definition of equity.
   **c.** change the definition of assets.
   **d.** All of the above.

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## IFRS Exercises

**IFRS15.1** Briefly describe some of the similarities and differences between GAAP and IFRS with respect to the accounting for liabilities.

**IFRS15.2** Ratzlaff Company issues (in euros) €2 million, 10-year, 8% bonds at 97, with interest payable annually on January 1.

### Instructions

**a.** Prepare the journal entry to record the sale of these bonds on January 1, 2020.

**b.** Assuming instead that the above bonds sold for 104, prepare the journal entry to record the sale of these bonds on January 1, 2020.

## International Financial Statement Analysis: Louis Vuitton

**IFRS15.3** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

### Instructions

Use the company's annual report to answer the following questions.

**a.** According to the notes to the financial statements, what is the composition of long-term gross borrowings?

**b.** According to the accounting policy note to the financial statements, how are borrowings measured?

**c.** Determine the amount of fixed-rate and adjustable-rate (floating) borrowings (gross) that the company reports.

**d.** Identify where non-current liabilities are reported on the company's balance sheet.

### Answers to IFRS Self-Test Questions

**1.** a **2.** a **3.** d

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Robert Voets/CBS via Getty Images

# Investments

## Chapter Preview

**Time Warner**'s management, as the following Feature Story indicates, believes in aggressive growth through investing in the stock of existing companies. Besides purchasing stock, companies also purchase other securities such as bonds issued by corporations or by governments. Companies can make investments for a short or long period of time, as a passive investment, or with the intent to control another company. As you will see in this chapter, the way in which a company accounts for its investments is determined by a number of factors.

## Feature Story

### "Is There Anything Else We Can Buy?"

In a rapidly changing world, you must keep up or suffer the consequences. In business, change requires investment.

A case in point is found in the entertainment industry. Technology is bringing about innovations so quickly that it is nearly impossible to guess which technologies will last and which will soon fade away. For example, will both satellite TV and cable TV survive? Or, will both be replaced by something else?

Consider the publishing industry as well. Will paper newspapers and magazines be replaced completely by online news? If you are a publisher, you have to make your best guess about what the future holds and invest accordingly.

**Time Warner Inc.** lives at the center of this arena. It is not an environment for the timid, and Time Warner's philosophy is anything but that. Instead, it might be characterized as, "If we can't beat you, we will buy you." Its mantra is "invest,

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invest, invest." A partial list of Time Warner's holdings gives an idea of its reach:

***Magazines:*** *Time, Life, Sports Illustrated,* and *Fortune.*

***Book publishers:*** Time-Life Books; Book-of-the-Month Club; Little, Brown & Co; and Sunset Books.

***Television and movies:*** Warner Bros. ("The Big Bang Theory" and "The Mentalist"), HBO, and movies like *The Hobbit: The Battle of the Five Armies* and *Into the Storm.*

***Broadcasting:*** TNT, CNN news, and Turner's library of thousands of classic movies.

***Internet:*** America Online and AOL Anywhere.

Time Warner owns more information and entertainment copyrights and brands than any other company in the world.

Recently, Rupert Murdoch, chairman and CEO of **21st Century Fox**, made an unsolicited $80 billion offer to buy the major media conglomerate. Murdoch's bid put "a positive light on Time Warner's assets," says one analyst. Murdoch eventually withdrew his bid, which resulted in driving down Time Warner's stock price. However, analysts expect the stock to eventually rebound as the long-term institutional investors start taking advantage of the lower price.

**Source:** Gene Marcial, "Why Time Warner Will Deliver Superb Growth and Valuation Despite Murdoch's Surrender," *Forbes* (August 6, 2014).

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Explain how to account for debt investments. | • Why corporations invest<br>• Accounting for debt investments | **DO IT! 1** Debt Investments |
| **LO 2** Explain how to account for stock investments. | • Holdings of less than 20%<br>• Holdings between 20% and 50%<br>• Holdings of more than 50% | **DO IT! 2** Stock Investments |
| **LO 3** Discuss how debt and stock investments are reported in financial statements. | • Debt securities<br>• Equity securities<br>• Balance sheet presentation<br>• Presentation of realized and unrealized gain or loss | **DO IT! 3a** Trading and Available-for-Sale Debt Securities<br>**3b** Financial Statement Presentation of Investments |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

# Accounting for Debt Investments

**LEARNING OBJECTIVE 1**

Explain how to account for debt investments.

## Why Corporations Invest

Corporations purchase investments in debt or stock securities generally for one of three reasons. First, a corporation may **have excess cash** that it does not need for the immediate purchase of operating assets. For example, many companies experience seasonal fluctuations in sales. A Cape Cod marina has more sales in the spring and summer than in the fall and winter. The reverse is true for an Aspen ski shop. Thus, at the end of an operating cycle, many companies may have cash on hand that is temporarily idle until the start of another operating cycle.

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These companies may invest the excess funds to earn—through interest and dividends—a greater return than they would get by just holding the funds in the bank. **Illustration 16.1** shows the role that temporary investments play in the operating cycle.

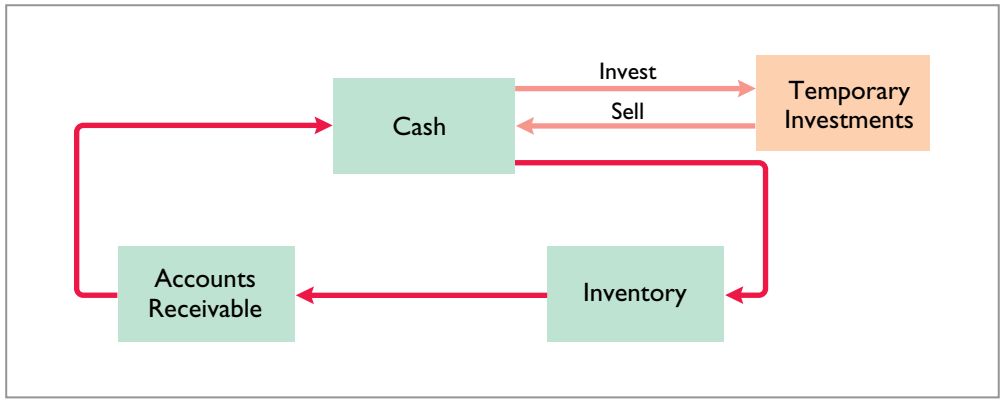



**ILLUSTRATION 16.1**
**Temporary investments and the operating cycle**

A second reason some companies such as banks purchase investments is to generate **earnings from investment income**. Although banks make most of their earnings by lending money, they also generate earnings by investing primarily in debt securities. Banks purchase investment securities because loan demand varies both seasonally and with changes in the economic climate. Thus, when loan demand is low, a bank must find other uses for its cash.

Some companies attempt to generate investment income through speculative investments. That is, they are speculating that the investment will increase in value and thus result in positive returns. Therefore, they invest mostly in the common stock of other corporations.

Third, companies also invest for **strategic reasons**. A company may purchase a noncontrolling interest in another company in a related industry in which it wishes to establish a presence. Or, a company can exercise some influence over one of its customers or suppliers by purchasing a significant, but not controlling, interest in that company. Another option is for a corporation to purchase a controlling interest in another company in order to enter a new industry without incurring the costs and risks associated with starting from scratch.

In summary, businesses invest in other companies for the reasons shown in **Illustration 16.2**.

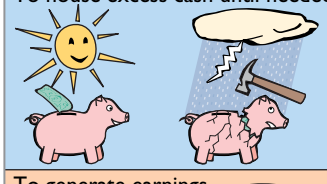
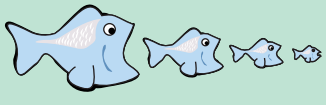
| Reason | Typical Investment |
|---|---|
| To house excess cash until needed  | Low-risk, highly liquid, short-term securities such as government-issued securities |
| To generate earnings | Banks and financial institutions often purchase debt securities, while mutual funds and index funds purchase debt and stock securities |
| To meet strategic goals  | Stocks of companies in a related industry or in an unrelated industry that the company wishes to enter |

**ILLUSTRATION 16.2**
**Why corporations invest**

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# Accounting for Debt Investments

**Debt investments** are investments in government and corporation bonds. In accounting for debt investments, companies make entries to record (1) the acquisition, (2) the interest revenue, and (3) the sale.

## Recording Acquisition of Bonds

**At acquisition, debt investments are recorded at cost.** Cost includes all expenditures necessary to acquire these investments, such as the price paid plus brokerage fees (commissions), if any.

For example, assume that Kuhl Corporation acquires 50 Doan Inc. 8%, 10-year, $1,000 bonds on January 1, 2020, for $50,000. Kuhl records the investment as:

A = L + SE
+50,000
–50,000
Cash Flows
–50,000

| | | | |
|---|---|---|---|
| Jan. 1 | Debt Investments (50 × $1,000) | 50,000 | |
| | Cash | | 50,000 |
| | (To record purchase of 50 Doan Inc. bonds) | | |

## Recording Bond Interest

The Doan Inc. bonds pay interest of $4,000 annually on January 1 ($50,000 × 8%). If Kuhl Corporation's fiscal year ends on December 31, it accrues the interest of $4,000 earned since January 1. The adjusting entry is:

A = L + SE
+4,000
+4,000 Rev
Cash Flows
no effect

| | | | |
|---|---|---|---|
| Dec. 31 | Interest Receivable | 4,000 | |
| | Interest Revenue | | 4,000 |
| | (To accrue interest on Doan Inc. bonds) | | |

Kuhl reports Interest Receivable as a current asset in the balance sheet. It reports Interest Revenue under "Other revenues and gains" in the income statement.

Kuhl reports receipt of the interest on January 1 as follows.

A = L + SE
+4,000
–4,000
Cash Flows
+4,000

| | | | |
|---|---|---|---|
| Jan. 1 | Cash | 4,000 | |
| | Interest Receivable | | 4,000 |
| | (To record receipt of accrued interest) | | |

A credit to Interest Revenue at this time is incorrect because the company earned and accrued interest revenue in the **preceding** accounting period.

## Recording Sale of Bonds

When Kuhl sells the bonds, it credits the investment account for the cost of the bonds. Kuhl records as a gain or loss any difference between the net proceeds from the sale (sales price less brokerage fees) and the cost of the bonds.

Assume, for example, that Kuhl Corporation receives net proceeds of $54,000 on the sale of the Doan Inc. bonds on January 1, 2021, after receiving the interest due. Since the securities cost $50,000, the company realizes a gain of $4,000. It records the sale as:

A = L + SE
+54,000
–50,000
+4,000 Rev
Cash Flows
+54,000

| | | | |
|---|---|---|---|
| Jan. 1 | Cash | 54,000 | |
| | Debt Investments | | 50,000 |
| | Gain on Sale of Debt Investments | | 4,000 |
| | (To record sale of Doan Inc. bonds) | | |

Kuhl reports the gain on sale of debt investments under "Other revenues and gains" in the income statement and reports losses under "Other expenses and losses."

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## Investor Insight

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### Hey, I Thought It Was Safe!

It is often stated that bond investments are safer than stock investments. After all, with an investment in bonds, you are guaranteed return of principal and interest payments over the life of the bonds. However, here are some other factors you may want to consider:

- In 2013, the value of bonds fell by 2% due to interest rate risk. That is, when interest rates rise, it makes the yields paid on existing bonds less attractive. As a result, the price of the existing bond you are holding falls.
- While interest rates are currently low, it is likely that they will increase in the future. If you hold bonds, there is a real possibility that the value of your bonds will be reduced.
- Credit risk also must be considered. Credit risk means that a company may not be able to pay back what it borrowed. Former bondholders in companies like **General Motors**, **United Air Lines**, and **Eastman Kodak** saw their bond values drop substantially when these companies declared bankruptcy.

An advantage of a bond investment over stock is that if you hold it to maturity, you will receive your principal and also interest payments over the life of the bond. But if you have to sell your bond investment before maturity, you may be facing a roller coaster regarding its value.

**Why is the fluctuating value of bonds of concern if a company intends to hold them until maturity? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 1 | Debt Investments

Waldo Corporation had the following transactions pertaining to debt investments.

| | |
|---|---|
| Jan. 1, 2020 | Purchased 30, $1,000 Hillary Co. 10% bonds for $30,000. Interest is payable annually on January 1. |
| Dec. 31, 2020 | Accrued interest on Hillary Co. bonds in 2020. |
| Jan. 1, 2021 | Received interest on Hillary Co. bonds. |
| Jan. 1, 2021 | Sold 15 Hillary Co. bonds for $14,600. |
| Dec. 31, 2021 | Accrued interest on Hillary Co. bonds in 2021. |

Journalize the above transactions, including the accrual of interest on December 31, 2020.

**ACTION PLAN**

- Record bond investments at cost.
- Record interest when accrued.
- When bonds are sold, credit the investment account for the cost of the bonds.
- Record any difference between the cost and the net proceeds as a gain or loss.

### Solution

| | | | |
|---|---|---|---|
| Jan. 1 (2020) | Debt Investments | 30,000 | |
| | Cash | | 30,000 |
| | (To record purchase of 30 Hillary Co. bonds) | | |
| Dec. 31 (2020) | Interest Receivable | 3,000 | |
| | Interest Revenue ($30,000 × 10%) | | 3,000 |
| | (To accrue interest on Hillary Co. bonds) | | |
| Jan. 1 (2021) | Cash | 3,000 | |
| | Interest Receivable | | 3,000 |
| | (To record receipt of interest on Hillary Co. bonds) | | |
| Jan. 1 (2021) | Cash | 14,600 | |
| | Loss on Sale of Debt Investments | 400 | |
| | Debt Investments ($30,000 × 15/30) | | 15,000 |
| | (To record sale of 15 Hillary Co. bonds) | | |
| Dec. 31 (2021) | Interest Receivable | 1,500 | |
| | Interest Revenue ($15,000 × 10%) | | 1,500 |
| | (To accrue interest on Hillary Co. bonds) | | |

Related exercise material: **BE16.1, DO IT! 16.1, E16.2, and E16.3.**

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# Accounting for Stock Investments

**LEARNING OBJECTIVE 2**

Explain how to account for stock investments.

**Stock investments** are investments in the capital stock of other corporations. When a company holds stock (and/or debt) of several different corporations, the group of securities is identified as an **investment portfolio**.

The accounting for investments in common stock depends on the extent of the investor's influence over the operating and financial affairs of the issuing corporation (the **investee**). **Illustration 16.3** shows the general guidelines.

**ILLUSTRATION 16.3**
**Accounting guidelines for stock investments**

| Investor's Ownership Interest in Investee's Common Stock | Presumed Influence on Investee | Accounting Guidelines |
|---|---|---|
| Less than 20% | Insignificant | Cost method |
| Between 20% and 50% | Significant | Equity method |
| More than 50% | Controlling | Consolidated financial statements |

Companies are required to use judgment instead of blindly following the guidelines.[1] We explain the application of each guideline next.

**HELPFUL HINT**
**The entries for investments in common stock also apply to investments in preferred stock.**

## Holdings of Less than 20%

In accounting for stock investments of less than 20%, companies use the cost method. Under the **cost method**, companies record the investment at cost, and recognize revenue only when cash dividends are received (see **Helpful Hint**).

### Recording Acquisition of Stock Investments

**At acquisition, stock investments are recorded at cost.** Cost includes all expenditures necessary to acquire these investments, such as the price paid plus any brokerage fees (commissions), if any.

For example, assume that on July 1, 2020, Sanchez Corporation acquires 1,000 shares (10% ownership) of Beal Corporation common stock. Sanchez pays $40 per share. The entry for the purchase is:

A = L + SE
+40,000
–40,000

**Cash Flows**
–40,000

| | | | |
|---|---|---|---|
| July 1 | Stock Investments (1,000 × $40) | 40,000 | |
| | Cash | | 40,000 |
| | (To record purchase of 1,000 shares of Beal Corporation common stock) | | |

[1]Among the factors that companies should consider in determining an investor's influence are whether (1) the investor has representation on the investee's board of directors, (2) the investor participates in the investee's policy-making process, (3) there are material transactions between the investor and investee, and (4) the common stock held by other stockholders is concentrated or dispersed.

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### Recording Dividends

During the time Sanchez owns the stock, it makes entries for any cash dividends received. If Sanchez receives a $2 per share dividend on December 31, the entry is:

| | | | |
|---|---|---|---|
| Dec. 31 | Cash (1,000 × $2) | 2,000 | |
| | Dividend Revenue | | 2,000 |
| | (To record receipt of a cash dividend) | | |

| A | = | L | + | SE |
|---|---|---|---|---|
| +2,000 | | | | |
| | | | | +2,000 Rev |

**Cash Flows**
+2,000

Sanchez reports Dividend Revenue under "Other revenues and gains" in the income statement. Unlike interest on notes and bonds, dividends do not accrue. Therefore, companies do not make adjusting entries to accrue dividends.

### Recording Sale of Stock

When a company sells a stock investment, it recognizes as a gain or a loss the difference between the net proceeds from the sale (sales price less brokerage fees) and the cost of the stock.

Assume that Sanchez Corporation receives net proceeds of $39,000 on the sale of its Beal stock on February 10, 2021. Because the stock cost $40,000, Sanchez incurred a loss of $1,000. The entry to record the sale is:

| | | | |
|---|---|---|---|
| Feb. 10 | Cash | 39,000 | |
| | Loss on Sale of Stock Investments | 1,000 | |
| | Stock Investments | | 40,000 |
| | (To record sale of Beal common stock) | | |

| A | = | L | + | SE |
|---|---|---|---|---|
| +39,000 | | | | |
| | | | | –1,000 Exp |
| –40,000 | | | | |

**Cash Flows**
+39,000

Sanchez reports the loss under "Other expenses and losses" in the income statement. It would show a gain on sale under "Other revenues and gains."

## Holdings Between 20% and 50%

When an investor company owns only a small portion of the shares of stock of another company, the investor cannot exercise control over the investee. But, when an investor owns between 20% and 50% of the common stock of a corporation, it is presumed that the investor has significant influence over the financial and operating activities of the investee. The investor probably has a representative on the investee's board of directors. Through that representative, the investor may exercise some control over the investee. The investee company in some sense becomes part of the investor company.

For example, even prior to purchasing all of **Turner Broadcasting**, **Time Warner** owned 20% of Turner. Because it exercised significant control over major decisions made by Turner, Time Warner used an approach called the equity method. Under the **equity method**, **the investor records its share of the net income of the investee in the year when it is earned**. An alternative might be to delay recognizing the investor's share of net income until the investee declares a cash dividend. But, that approach would ignore the fact that the investor and investee are, in some sense, one company, making the investor better off by the investee's net income.

Under the **equity method**, the investor company initially records the investment in common stock at cost (see **Helpful Hint**). After that, it **adjusts** the investment account annually to show the investor's equity in the investee. Each year, the investor does the following. (1) It increases (debits) the investment account and increases (credits) revenue for its share of the investee's net income.[2] (2) The investor also decreases (credits) the investment account for the amount of dividends received. The investment account is reduced for dividends received because payment of a dividend decreases the net assets of the investee.

**HELPFUL HINT**
**Under the equity method, the investor recognizes revenue on the accrual basis, i.e., when it is recognized by the investee.**

[2]Conversely, the investor increases (debits) a loss account and decreases (credits) the investment account for its share of the investee's net loss.

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## Recording Acquisition of Stock

Assume that Milar Corporation acquires 30% of the common stock of Beck Company for $120,000 on January 1, 2020. The entry to record this transaction is:

A = L + SE
+120,000
−120,000

**Cash Flows**
−120,000

| | | | |
|---|---|---|---|
| Jan. 1 | Stock Investments | 120,000 | |
| | Cash | | 120,000 |
| | (To record purchase of Beck common stock) | | |

## Recording Revenue and Dividends

For 2020, Beck reports net income of $100,000. It declares and pays a $40,000 cash dividend. Milar records (1) its share of Beck's income, $30,000 (30% × $100,000) and (2) the reduction in the investment account for the dividends received, $12,000 ($40,000 × 30%). The entries are:

A = L + SE
+30,000
+30,000 Rev

**Cash Flows**
no effect

(1)

| | | | |
|---|---|---|---|
| Dec. 31 | Stock Investments | 30,000 | |
| | Revenue from Stock Investments | | 30,000 |
| | (To record 30% equity in Beck's 2020 net income) | | |

A = L + SE
+12,000
−12,000

**Cash Flows**
+12,000

(2)

| | | | |
|---|---|---|---|
| Dec. 31 | Cash | 12,000 | |
| | Stock Investments | | 12,000 |
| | (To record dividends received) | | |

After Milar posts the transactions for the year, its investment and revenue accounts are as shown in **Illustration 16.4**.

**ILLUSTRATION 16.4**
**Investment and revenue accounts after posting**

**Stock Investments**

| | | | |
|---|---|---|---|
| Jan. 1 | 120,000 | Dec. 31 | **12,000** |
| Dec. 31 | **30,000** | | |
| Dec. 31 Bal. | 138,000 | | |

**Revenue from Stock Investments**

| | | | |
|---|---|---|---|
| | | Dec. 31 | **30,000** |

During the year, the investment account increased $18,000. This increase of $18,000 is explained as follows: (1) Milar records a $30,000 increase in revenue from its stock investment in Beck, and (2) Milar records a $12,000 decrease due to dividends received from its stock investment in Beck.

Note that the difference between reported revenue under the cost method and reported revenue under the equity method can be significant. For example, Milar would report only $12,000 of dividend revenue (30% × $40,000) if it used the cost method.

# Holdings of More than 50%

A company that owns more than 50% of the common stock of another entity is known as the **parent company**. The entity whose stock the parent company owns is called the **subsidiary (affiliated) company**. Because of its stock ownership, the parent company has a **controlling interest** in the subsidiary.

When a company owns more than 50% of the common stock of another company, it usually prepares **consolidated financial statements**. These statements present the total assets and liabilities controlled by the parent company. They also present the total revenues and expenses of the subsidiary companies. Companies prepare consolidated statements **in addition to** the financial statements for the parent and individual subsidiary companies.

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As noted earlier, prior to acquiring all of **Turner Broadcasting**, **Time Warner** accounted for its investment in Turner using the equity method. Time Warner's net investment in Turner was reported in a single line item—Other investments. After the merger, Time Warner instead consolidated Turner's results with its own. Under this approach, Time Warner included the individual assets and liabilities of Turner with its own assets. That is, Turner's plant and equipment were added to Time Warner's plant and equipment, its receivables were added to Time Warner's receivables, and so on. A similar sort of consolidation went on when **AOL** merged with Time Warner (see **Helpful Hint**).

**HELPFUL HINT**

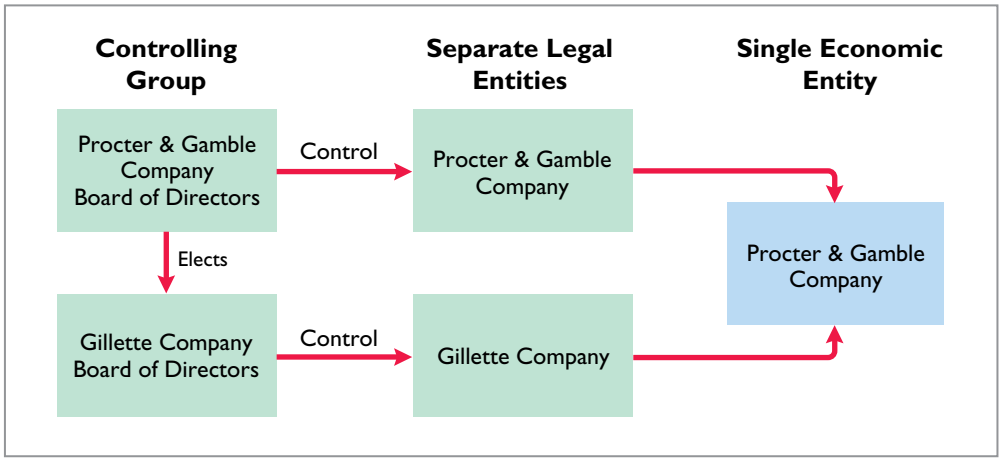
**If the parent (A) has three wholly owned subsidiaries (B, C, and D), there are four separate legal entities but only one economic entity from the viewpoint of the shareholders of the parent company.**

## Accounting Across the Organization — Procter & Gamble Company

© Stígur Karlsson/iStockphoto

### How Procter & Gamble Accounts for Gillette

Several years ago, **Procter & Gamble Company** acquired **Gillette Company** for $53.4 billion. The common stockholders of Procter & Gamble elect the board of directors of the company, who in turn select the officers and managers of the company. Procter & Gamble's board of directors controls the property owned by the corporation, which includes the common stock of Gillette. Thus, they are in a position to elect the board of directors of Gillette and, in effect, control its operations. These relationships are graphically illustrated here.




**Where on Procter & Gamble's balance sheet will you find its investment in Gillette Company? (Go to WileyPLUS for this answer and additional questions.)**

**Consolidated statements are useful to the stockholders, board of directors, and management of the parent company. These statements indicate the magnitude and scope of operations of the companies under common control.** For example, regulators and the courts undoubtedly used the consolidated statements of **AT&T** to determine whether a breakup of the company was in the public interest. **Illustration 16.5** lists three companies that prepare consolidated statements and some of the companies they have owned.

| PepsiCo | Cendant | The Disney Company |
|---|---|---|
| Frito-Lay | Howard Johnson | Capital Cities/ABC, Inc. |
| Tropicana | Ramada Inn | Disneyland, Disney World |
| Quaker Oats | Century 21 | Mighty Ducks |
| Pepsi-Cola | Coldwell Banker | Anaheim Angels |
| Gatorade | Avis | ESPN |

**ILLUSTRATION 16.5**

**Examples of consolidated companies and their subsidiaries**

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## DO IT! 2 | Stock Investments

Presented below are two independent situations.

1. Rho Jean Inc. acquired 5% of the 400,000 shares of common stock of Stillwater Corp. at a total cost of $6 per share on May 18, 2020. On August 30, Stillwater declared and paid a $75,000 dividend. On December 31, Stillwater reported net income of $244,000 for the year.
2. Debbie, Inc. obtained significant influence over North Sails by buying 40% of North Sails' 60,000 outstanding shares of common stock at a cost of $12 per share on January 1, 2020. On April 15, North Sails declared and paid a cash dividend of $45,000. On December 31, North Sails reported net income of $120,000 for the year.

Prepare all necessary journal entries for 2020 for (1) Rho Jean Inc. and (2) Debbie, Inc.

**ACTION PLAN**

- Presume that the investor has relatively little influence over the investee when an investor owns less than 20% of the common stock of another corporation. In this case, net income earned by the investee is not considered a proper basis for recognizing income from the investment by the investor.
- Presume significant influence for investments of 20%–50%. Therefore, record the investor's share of the net income of the investee.

### Solution

| | | | | |
|---|---|---|---|---|
| **1.** May 18 | Stock Investments (400,000 × 5% × $6) | | 120,000 | |
| | Cash | | | 120,000 |
| | (To record purchase of 20,000 shares of Stillwater Co. stock) | | | |
| Aug. 30 | Cash | | 3,750 | |
| | Dividend Revenue ($75,000 × 5%) | | | 3,750 |
| | (To record receipt of cash dividend) | | | |
| **2.** Jan. 1 | Stock Investments (60,000 × 40% × $12) | | 288,000 | |
| | Cash | | | 288,000 |
| | (To record purchase of 24,000 shares of North Sails' stock) | | | |
| Apr. 15 | Cash | | 18,000 | |
| | Stock Investments ($45,000 × 40%) | | | 18,000 |
| | (To record receipt of cash dividend) | | | |
| Dec. 31 | Stock Investments ($120,000 × 40%) | | 48,000 | |
| | Revenue from Stock Investments | | | 48,000 |
| | (To record 40% equity in North Sails' net income) | | | |

Related exercise material: **BE16.2, BE16.3, DO IT! 16.2, E16.4, E16.5, E16.6, E16.7, and E16.8.**

# Reporting Investments in Financial Statements

**LEARNING OBJECTIVE 3**

Discuss how debt and stock investments are reported in the financial statements.

The value of debt and stock investments may fluctuate greatly during the time they are held. For example, in a 12-month period, the stock of **Time Warner** hit a high of 58½ and a low of 9. In light of such price fluctuations, how should companies value investments at the balance sheet date? Valuation could be at cost, at fair value, or at the lower-of-cost-or-market value.

Many people argue that fair value offers the best approach because it represents the expected cash realizable value of securities. **Fair value** is the amount for which a security could be sold in a normal market. Others counter that unless a security is going to be sold soon, the fair value is not relevant because the price of the security will likely change again.

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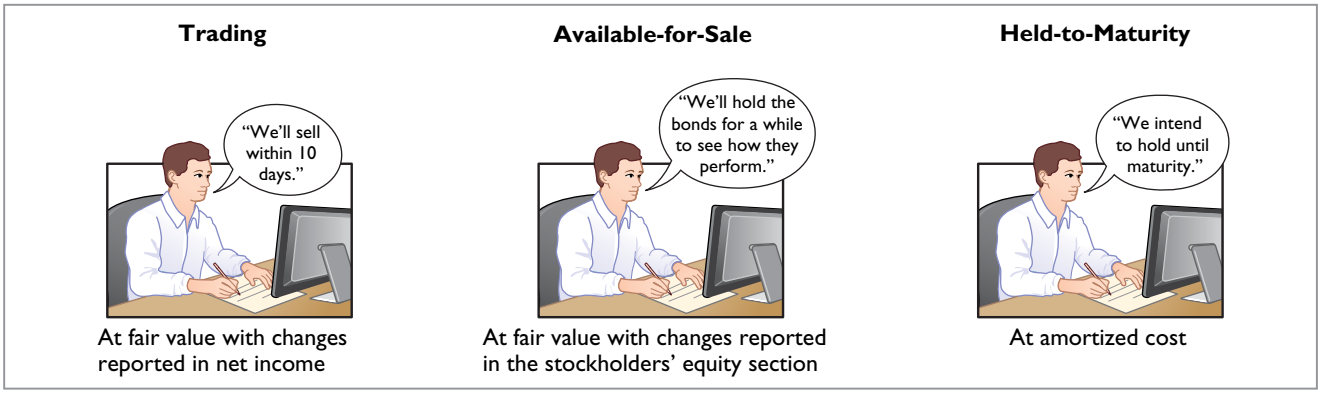
# Debt Securities

For purposes of valuation and reporting at a financial statement date, debt investments are classified into three categories:

1. **Trading securities** are bought and held primarily for sale in the near term to generate income on short-term price differences.
2. **Available-for-sale securities** are held with the intent of selling them sometime in the future.
3. **Held-to-maturity securities** are debt securities that the investor has the intent and ability to hold to maturity.[3]

**Illustration 16.6** shows the valuation guidelines for these debt securities.

**ILLUSTRATION 16.6** **Valuation guidelines for debt securities**


Trading
"We'll sell within 10 days."
At fair value with changes reported in net income
Available-for-Sale
"We'll hold the bonds for a while to see how they perform."
At fair value with changes reported in the stockholders' equity section
Held-to-Maturity
"We intend to hold until maturity."
At amortized cost

## Trading Securities

Trading securities are held with the intention of selling them in a short period of time (generally less than three months and sometimes less than a full day). **Trading** means frequent buying and selling. As indicated in Illustration 16.6, companies adjust trading securities to fair value at the end of each period (an approach referred to as **mark-to-market** accounting). They report changes from cost **as part of net income**. The changes are reported as **unrealized gains or losses** because the securities have not been sold. The unrealized gain or loss is the difference between the **total cost** of trading securities and their **total fair value**. Companies classify trading securities as a current asset (see **Helpful Hint**).

**HELPFUL HINT**

**Companies report an unrealized gain or loss in the income statement because of the likelihood that the securities will be sold at fair value since they are a short-term investment.**

As an example, **Illustration 16.7** shows the costs and fair values for investments classified as trading securities for Pace Corporation on December 31, 2020. Pace has an unrealized gain of $7,000 because total fair value ($147,000) is $7,000 greater than total cost ($140,000).

**ILLUSTRATION 16.7**
**Valuation of trading securities**

**Trading Securities, December 31, 2020**

| Investments | Cost | Fair Value | Unrealized Gain (Loss) |
|---|---|---|---|
| Yorkville Company bonds | $ 50,000 | $ 48,000 | $(2,000) |
| Kodak Company bonds | 90,000 | 99,000 | 9,000 |
| Total | $140,000 | $147,000 | **$ 7,000** |

The fact that trading securities are a short-term investment increases the likelihood that Pace will sell them at fair value for a gain. Pace records fair value and the unrealized gain

[3]This category is provided for completeness. The accounting and valuation issues related to held-to-maturity securities are discussed in more advanced accounting courses.

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through an adjusting entry at the time it prepares financial statements. In this entry, the company uses a valuation allowance account, Fair Value Adjustment—Trading, to record the difference between the total cost and the total fair value of the securities. The adjusting entry for Pace is:

A = L + SE
+7,000
+7,000 Rev

**Cash Flows**
no effect

| | | | |
|---|---|---|---|
| Dec. 31 | Fair Value Adjustment—Trading | 7,000 | |
| | Unrealized Gain or Loss—Income | | 7,000 |
| | (To record unrealized gain on trading securities) | | |

The use of the Fair Value Adjustment—Trading account enables the company to maintain a record of the investment cost. Actual cost is needed to determine the gain or loss realized when the securities are sold. The company adds the debit balance (or subtracts a credit balance) of the Fair Value Adjustment—Trading account to the cost of the investments to arrive at a fair value for the trading securities.

**The fair value of the securities is the amount companies report on the balance sheet.** They report the unrealized gain on the income statement under "Other revenues and gains." The term **income** in the account title indicates that the gain affects net income.

If the total cost of the trading securities is greater than total fair value, an unrealized loss has occurred. In such a case, the adjusting entry is a debit to Unrealized Gain or Loss—Income and a credit to Fair Value Adjustment—Trading. Companies report the unrealized loss under "Other expenses and losses" in the income statement.

The Fair Value Adjustment—Trading account is carried forward into future accounting periods. No entries are made to this account during the period. At the end of each reporting period, a company adjusts the balance in the account to the difference between cost and fair value at that time. It closes the Unrealized Gain or Loss—Income account at the end of the reporting period.

## Available-for-Sale Securities

As indicated earlier, available-for-sale securities are held with the intent of selling them sometime in the future. If the intent is to sell the securities within the next year or operating cycle, a company classifies the securities as current assets in the balance sheet. Otherwise, it classifies them as long-term assets in the investments section of the balance sheet.

Companies also report available-for-sale securities at fair value. The procedure for determining fair value and unrealized gain or loss for these securities is the same as that for trading securities. To illustrate, assume that Shelton Corporation has two securities that are classified as available-for-sale. **Illustration 16.8** provides information on the cost, fair value, and amount of the unrealized gain or loss on December 31, 2020. There is an unrealized loss of $9,537 because total cost ($293,537) is $9,537 more than total fair value ($284,000).

**ILLUSTRATION 16.8**
**Valuation of available-for-sale securities**

**Available-for-Sale Securities, December 31, 2020**

| Investments | Cost | Fair Value | Unrealized Gain (Loss) |
|---|---|---|---|
| Campbell Soup Co. bonds | $ 93,537 | $103,600 | $10,063 |
| Hershey Foods bonds | 200,000 | 180,400 | (19,600) |
| Total | $293,537 | $284,000 | $ (9,537) |

Both the adjusting entry and the reporting of the unrealized loss from Shelton's available-for-sale securities differ from those illustrated for trading securities. The differences result because these securities are not going to be sold in the near term. Thus, prior to actual sale it is much more likely that changes in fair value may reverse the unrealized loss. Therefore, Shelton does not report an unrealized loss in the income statement. Instead, the company reports it as an item of other comprehensive income in the comprehensive income statement. In the adjusting entry, Shelton identifies the fair value adjustment account with available-for-sale securities, and identifies the unrealized gain or loss account with stockholders' equity (see **Helpful Hint**). The adjusting entry for Shelton to record the unrealized loss of $9,537 is:

**HELPFUL HINT**
**The entry is the same regardless of whether the securities are considered short-term or long-term.**

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| | | | |
|---|---|---|---|
| Dec. 31 | Unrealized Gain or Loss—Equity | 9,537 | |
| | Fair Value Adjustment—Available-for-Sale | | 9,537 |
| | (To record unrealized loss on available-for-sale securities) | | |

A = L + SE
−9,537 Eq
−9,537

**Cash Flows**
no effect

If total fair value exceeds total cost, Shelton would record the adjusting entry as an increase (debit) to Fair Value Adjustment—Available-for-Sale and a credit to Unrealized Gain or Loss—Equity.

Shelton's unrealized loss of $9,537 would appear in the comprehensive income statement as shown in **Illustration 16.9**.

**Shelton Corporation**
**Comprehensive Income Statement**
**For the Year Ended December 31, 2020**

| | |
|---|---|
| Net income | $118,000 |
| Other comprehensive income | |
| Unrealized loss on available-for-sale securities | (9,537) |
| Comprehensive income | $108,463 |

**ILLUSTRATION 16.9**
**Comprehensive income statement**

**ETHICS NOTE**

**The SEC accused investment bank Morgan Stanley of overstating the value of certain bond investments by $75 million. The SEC stated that, in applying fair value accounting, Morgan Stanley used its own more optimistic assumptions rather than relying on external pricing sources.**

For available-for-sale securities, the company carries forward the Unrealized Gain or Loss—Equity account to future periods. At each future balance sheet date, the account is adjusted with the Fair Value Adjustment—Available-for-Sale account to show the difference between cost and fair value at that time (see **Ethics Note**).

## DO IT! 3a | Trading and Available-for-Sale Debt Securities

Some of Powderhorn Corporation's investment debt securities are classified as trading securities and some are classified as available-for-sale. The cost and fair value of each category at December 31, 2020, are shown below.

| | Cost | Fair Value | Unrealized Gain (Loss) |
|---|---|---|---|
| Trading securities | $93,600 | $94,900 | $1,300 |
| Available-for-sale securities | $48,800 | $51,400 | $2,600 |

At December 31, 2019, the Fair Value Adjustment—Trading account had a debit balance of $9,200, and the Fair Value Adjustment—Available-for-Sale account had a credit balance of $5,750. Prepare the required journal entries for each group of securities for December 31, 2020.

**ACTION PLAN**

- **Mark trading securities to fair value and report the adjustment in current-period income.**
- **Mark available-for-sale securities to fair value and report the adjustment as a separate component of stockholders' equity.**

### Solution

*Trading securities:*

| | | |
|---|---|---|
| Unrealized Gain or Loss—Income | 7,900* | |
| Fair Value Adjustment—Trading | | 7,900 |
| (To record unrealized loss on trading securities) | | |

*$9,200 – $1,300

*Available-for-sale securities:*

| | | |
|---|---|---|
| Fair Value Adjustment—Available-for-Sale | 8,350** | |
| Unrealized Gain or Loss—Equity | | 8,350 |
| (To record unrealized gain on available-for-sale securities) | | |

**$5,750 + $2,600

Related exercise material: **BE16.4, BE16.6, DO IT! 16.3a, E16.10, E16.11, and E16.12.**

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# Equity Securities

The valuation and reporting of equity securities at a financial statement date depends on the levels of influence involved, as shown in Illustration 16.10.

**ILLUSTRATION 16.10**
**Accounting and reporting for equity securities by category**

| Category | Valuation | Unrealized Gains or Losses | Other Income Effects |
|---|---|---|---|
| Holdings less than 20% | Fair value | Recognized in net income | Dividends declared; gains and losses from sale. |
| Holdings between 20% and 50% | Equity | Not recognized | Proportionate share of investee's net income. |
| Holdings more than 50% | Consolidation | Not recognized | Not applicable. |

When an investor has an interest of less than 20%, it is presumed that the investor has little or no influence over the investee. In such cases, if market prices are available subsequent to acquisition, the company values and reports the stock investment using the fair value method.

## Illustration of Stock Holdings Less than 20%

At December 31, 2020, Shelton Corporation has two equity securities in which it has less than a 20% ownership interest and therefore has little or no influence over these companies. Shelton has the following cost and fair value for these two companies, as shown in Illustration 16.11.

**ILLUSTRATION 16.11**
**Computation of fair value adjustment—equity security portfolio (2020)**

| Investments | Cost | Fair Value | Unrealized Gain (Loss) |
|---|---|---|---|
| Twitter Co. | $259,700 | $275,000 | $ 15,300 |
| Campbell Soup Co. | 317,500 | 304,000 | (13,500) |
| Totals | $577,200 | $579,000 | $ 1,800 |

For Shelton's equity securities portfolio, the gross unrealized gain is $15,300 and the gross unrealized loss is $13,500, resulting in a net unrealized gain of $1,800. That is, the fair value of the equity securities portfolio is above cost by $1,800.

Shelton records the net unrealized gains and losses related to changes in the fair value equity securities in an Unrealized Gain or Loss—Income account. In this case, Shelton prepares an adjusting entry debiting the Fair Value Adjustment—Stock account and crediting the Unrealized Gain or Loss—Income account to record the increase in fair value and to record the gain as follows.

**December 31, 2020**

| | | |
|---|---|---|
| Fair Value Adjustment—Stock | 1,800 | |
| Unrealized Gain or Loss—Income | | 1,800 |
| (To record unrealized gain on equity securities) | | |

Similar to trading securities, Shelton adjusts the balance in the Fair Value Adjustment—Stock account for the difference between cost and fair value. In addition, the unrealized gain related to Shelton's equity securities are reported in the "Other revenues and gains" section of the income statement.

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# Balance Sheet Presentation

In the balance sheet presentation, companies must classify investments as either short-term or long-term (see **Helpful Hint**).

**HELPFUL HINT**

Trading securities are always classified as short-term. Available-for-sale securities can be either short-term or long-term.

## Short-Term Investments

**Short-term investments** (also called **marketable securities**) are securities held by a company that are (1) **readily marketable** and (2) **intended to be converted into cash** within the next year or operating cycle, whichever is longer. Investments that do not meet **both criteria** are classified as **long-term investments**.

**Readily Marketable.** **An investment is readily marketable when it can be sold easily whenever the need for cash arises.** Short-term paper[4] meets this criterion because a company can readily sell it to other investors. Stocks and bonds traded on organized securities markets, such as the New York Stock Exchange, are readily marketable because they can be bought and sold daily. In contrast, there may be only a limited market for the securities issued by small corporations and no market for the securities of a privately held company.

**Intent to Convert.** **Intent to convert means that management intends to sell the investment within the next year or operating cycle, whichever is longer.** Generally, this criterion is satisfied when the investment is considered a resource that the company will use whenever the need for cash arises. For example, a ski resort may invest idle cash during the summer months with the intent to sell the securities to buy supplies and equipment shortly before the next winter season. This investment is considered short-term even if lack of snow cancels the next ski season and eliminates the need to convert the securities into cash as intended.

Because of their high liquidity, companies list short-term investments immediately below Cash in the current assets section of the balance sheet. Short-term investments are reported at fair value. For example, Weber Corporation would report its trading securities as shown in **Illustration 16.12**.

**ILLUSTRATION 16.12**

**Balance sheet presentation of short-term investments**

**Weber Corporation**
**Balance Sheet (partial)**

| | |
|---|---|
| Current assets | |
| Cash | $21,000 |
| **Debt investments (at fair value)** | **60,000** |

## Long-Term Investments

Companies generally report long-term investments in a separate section of the balance sheet immediately below "Current assets," as shown in **Illustration 16.13**. Long-term investments in available-for-sale securities are reported at fair value. Investments in common stock accounted for under the equity method are reported at equity.

**ILLUSTRATION 16.13**

**Balance sheet presentation of long-term investments**

**Weber Corporation**
**Balance Sheet (partial)**

| | | |
|---|---|---|
| Investments | | |
| Debt investment (at fair value) | $100,000 | |
| **Stock investments (at fair value)** | **50,000** | |
| **Stock investments (at equity)** | **150,000** | |
| Total investments | | $300,000 |

[4]Short-term paper includes (1) certificates of deposits (CDs) issued by banks, (2) money market certificates issued by banks and savings and loan associations, (3) Treasury bills issued by the U.S. government, and (4) commercial paper issued by corporations with good credit ratings.

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## Presentation of Realized and Unrealized Gain or Loss

Companies must present in the financial statements gains and losses on investments, whether realized or unrealized. In the income statement, companies report gains and losses, as well as interest and dividend revenue, in the nonoperating activities section under the categories listed in Illustration 16.14.

**ILLUSTRATION 16.14**
**Nonoperating items related to investments**

| Other Revenues and Gains | Other Expenses and Losses |
|---|---|
| Interest Revenue | Loss on Sale of Investments |
| Dividend Revenue | Unrealized Loss |
| Gain on Sale of Investments | |
| Unrealized Gain | |

Companies report the cumulative amount of other comprehensive income items from the current and previous years as a separate component of stockholders' equity. To illustrate, assume that Muzzillo Inc. has common stock of $3,000,000, retained earnings of $1,500,000, and an accumulated other comprehensive loss of $100,000. Illustration 16.15 shows the financial statement presentation of the accumulated other comprehensive loss.

**ILLUSTRATION 16.15**
**Unrealized loss in stockholders' equity section**

**Muzzillo Inc.**
**Balance Sheet (partial)**

| | |
|---|---|
| Stockholders' equity | |
| Common stock | $3,000,000 |
| Retained earnings | 1,500,000 |
| Total paid-in capital and retained earnings | 4,500,000 |
| **Accumulated other comprehensive loss** | **(100,000)** |
| Total stockholders' equity | $4,400,000 |

A classified balance sheet is shown in Illustration 16.16. This balance sheet includes (highlighted in red) short-term and long-term debt and stock investments as well as a presentation of accumulated other comprehensive income.

**ILLUSTRATION 16.16**
**Classified balance sheet**

**Pace Corporation**
**Balance Sheet**
**December 31, 2020**

**Assets**

| | | |
|---|---|---|
| Current assets | | |
| Cash | | $ 21,000 |
| **Debt investments (at fair value)** | | **147,000** |
| Accounts receivable | $ 84,000 | |
| Less: Allowance for doubtful accounts | 4,000 | 80,000 |
| Inventory, at FIFO cost | | 43,000 |
| Prepaid insurance | | 23,000 |
| Total current assets | | 314,000 |
| Investments | | |
| **Debt investments (at fair value)** | **20,000** | |
| **Stock investments (at fair value)** | **30,000** | |
| **Stock investments (at equity)** | **150,000** | |
| Total investments | | 200,000 |

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**ILLUSTRATION 16.16**
(*continued*)

| | | | |
|---|---|---|---|
| Property, plant, and equipment | | | |
| Land | | 200,000 | |
| Buildings | $800,000 | | |
| Less: Accumulated depreciation—buildings | 200,000 | 600,000 | |
| Equipment | 180,000 | | |
| Less: Accumulated depreciation—equipment | 54,000 | 126,000 | |
| Total property, plant, and equipment | | | 926,000 |
| Intangible assets | | | |
| Goodwill | | | 270,000 |
| Total assets | | | $1,710,000 |
| **Liabilities and Stockholders' Equity** | | | |
| Current liabilities | | | |
| Accounts payable | | | $ 185,000 |
| Federal income taxes payable | | | 60,000 |
| Interest payable | | | 10,000 |
| Total current liabilities | | | 255,000 |
| Long-term liabilities | | | |
| Bonds payable, 10%, due 2025 | | $ 300,000 | |
| Less: Discount on bonds | | 10,000 | |
| Total long-term liabilities | | | 290,000 |
| Total liabilities | | | 545,000 |
| Stockholders' equity | | | |
| Paid-in capital | | | |
| Common stock, $10 par value, 200,000 shares authorized, 80,000 shares issued and outstanding | | 800,000 | |
| In excess of par—common stock | | 100,000 | |
| Total paid-in capital | | 900,000 | |
| Retained earnings (Note 1) | | 255,000 | |
| Total paid-in capital and retained earnings | | 1,155,000 | |
| **Add: Accumulated other comprehensive income** | | **10,000** | |
| Total stockholders' equity | | | 1,165,000 |
| Total liabilities and stockholders' equity | | | $1,710,000 |

**Note 1.** Retained earnings of $100,000 is restricted for plant expansion.

## DO IT! 3b | Financial Statement Presentation of Investments

Identify where each of the following items would be reported in the financial statements.

1. Interest earned on investments in bonds.
2. Fair value adjustment—stock.
3. Unrealized gain or loss—equity.
4. Gain on sale of investments in stock.
5. Unrealized gain—income.

Use the following possible categories:

*Balance sheet:*

| | |
|---|---|
| Current assets | Current liabilities |
| Investments | Long-term liabilities |
| Property, plant, and equipment | Stockholders' equity |
| Intangible assets | |

*Income statement:*

| | |
|---|---|
| Other revenues and gains | Other expenses and losses |

**ACTION PLAN**

- Classify investments as current assets if they will be held for less than one year.
- Report unrealized gains or losses on trading securities in income.
- Report unrealized gains or losses on available-for-sale securities in equity.
- Report realized gains and losses on investments in the income statement as "Other revenues and gains" or as "Other expenses and losses."

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**Solution**

| Item | Financial Statement | Category |
|---|---|---|
| **1.** Interest earned on investments in bonds. | Income statement | Other revenues and gains |
| **2.** Fair value adjustment—stock | Balance sheet | Investments |
| **3.** Unrealized gain or loss—equity | Balance sheet | Stockholders' equity |
| **4.** Gain on sale of investments in stock | Income statement | Other revenues and gains |
| **5.** Unrealized gain—income | Income statement | Other revenues and gains |

Related exercise material: **BE16.4, BE16.5, BE16.6, BE16.7, BE16.8, BE16.9, BE16.10, DO IT! 16.3b, E16.10, E16.11, and E16.12.**

# Review and Practice

## Learning Objectives Review

### 1 Explain how to account for debt investments.

Corporations invest for three common reasons: (a) they have excess cash, (b) they view investment income as a significant revenue source, and (c) they have strategic goals such as gaining control of a competitor or supplier or moving into a new line of business.

Entries for investments in debt securities are required when companies purchase bonds, receive or accrue interest, and sell bonds.

### 2 Explain how to account for stock investments.

Entries for investments in common stock are required when companies purchase stock, receive dividends, and sell stock. When ownership is less than 20%, the cost method is used—the investment is recorded at cost. When ownership is between 20% and 50%, the equity method should be used—the investor records its share of the net income of the investee in the year it is earned.

When a company owns more than 50% of the common stock of another company, consolidated financial statements are usually prepared. These statements are especially useful to the stockholders, board of directors, and management of the parent company.

### 3 Discuss how debt and stock investments are reported in the financial statements.

Investments in debt securities are classified as trading, available-for-sale, or held-to-maturity for valuation and reporting purposes. Trading securities are reported as current assets at fair value, with changes from cost reported in net income. Available-for-sale securities are also reported at fair value, with the changes from cost reported as items of other comprehensive income. Available-for-sale securities are classified as short-term or long-term depending on their expected realization.

Investments in stock when ownership is less than 20% are reported at fair values, with changes from cost reported in net income.

Short-term investments are securities held by a company that are readily marketable and intended to be converted to cash within the next year or operating cycle, whichever is longer. Investments that do not meet both criteria are classified as long-term investments.

## Glossary Review

**Available-for-sale securities** Securities that are held with the intent of selling them sometime in the future. (p. 16-11).

**Consolidated financial statements** Financial statements that present the assets and liabilities controlled by the parent company and the total revenues and expenses of the subsidiary companies. (p. 16-8).

**Controlling interest** Ownership of more than 50% of the common stock of another entity. (p. 16-8).

**Cost method** An accounting method in which the investment in common stock is recorded at cost, and revenue is recognized only when cash dividends are received. (p. 16-6).

**Debt investments** Investments in government and corporation bonds. (p. 16-4).

**Equity method** An accounting method in which the investment in common stock is initially recorded at cost, and the investment account is then adjusted annually to show the investor's equity in the investee. (p. 16-7).

**Fair value** Amount for which a security could be sold in a normal market. (p. 16-10).

**Held-to-maturity securities** Debt securities that the investor has the intent and ability to hold to their maturity date. (p. 16-11).

**Investment portfolio** A group of stocks and/or debt securities in different corporations held for investment purposes. (p. 16-6).

**Long-term investments** Investments that are not readily marketable or that management does not intend to convert into cash within the next year or operating cycle, whichever is longer. (p. 16-15).

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**Mark-to-market** Approach used by companies to adjust securities to fair value at the end of each period. (p. 16-11).

**Parent company** A company that owns more than 50% of the common stock of another entity. (p. 16-8).

**Short-term investments (marketable securities)** Investments that are readily marketable and intended to be converted into cash within the next year or operating cycle, whichever is longer. (p. 16-15).

**Stock investments** Investments in the capital stock of other corporations. (p. 16-6).

**Subsidiary (affiliated) company** A company in which more than 50% of its stock is owned by another company. (p. 16-8).

**Trading securities** Securities bought and held primarily for sale in the near term to generate income on short-term price differences. (p. 16-11).

## Practice Multiple-Choice Questions

**1. (LO 1)** Which of the following is **not** a primary reason why corporations invest in debt and equity securities?

**a.** They wish to gain control of a competitor.
**b.** They have excess cash.
**c.** They wish to move into a new line of business.
**d.** They are required to by law.

**2. (LO 1)** Debt investments are initially recorded at:

**a.** cost.
**b.** cost plus accrued interest.
**c.** fair value.
**d.** face value.

**3. (LO 1)** Hanes Company sells debt investments costing $26,000 for $28,000. In journalizing the sale, credits are to:

**a.** Debt Investments and Loss on Sale of Debt Investments.
**b.** Debt Investments and Gain on Sale of Debt Investments.
**c.** Stock Investments and Gain on Sale of Stock Investments.
**d.** No correct answer is given.

**4. (LO 2)** Pryor Company receives net proceeds of $42,000 on the sale of stock investments that cost $39,500. This transaction will result in reporting in the income statement a:

**a.** loss of $2,500 under "Other expenses and losses."
**b.** loss of $2,500 under "Operating expenses."
**c.** gain of $2,500 under "Other revenues and gains."
**d.** gain of $2,500 under "Operating revenues."

**5. (LO 2)** The equity method of accounting for long-term investments in stock should be used when the investor has significant influence over an investee and owns:

**a.** between 20% and 50% of the investee's common stock.
**b.** 20% or more of the investee's common stock.
**c.** more than 50% of the investee's common stock.
**d.** less than 20% of the investee's common stock.

**6. (LO 2)** Assume that Horicon Corp. acquired 25% of the common stock of Sheboygan Corp. on January 1, 2020, for $300,000. During 2020, Sheboygan Corp. reported net income of $160,000 and paid total dividends of $60,000. If Horicon uses the equity method to account for its investment, the balance in the investment account on December 31, 2020, will be:

**a.** $300,000.
**b.** $325,000.
**c.** $400,000.
**d.** $340,000.

**7. (LO 2)** Using the information in Question 6, what entry would Horicon make to record the receipt of the dividend from Sheboygan?

**a.** Debit Cash and credit Revenue from Stock Investments.
**b.** Debit Cash Dividends and credit Revenue from Stock Investments.
**c.** Debit Cash and credit Stock Investments.
**d.** Debit Cash and credit Dividend Revenue.

**8. (LO 2)** You have a controlling interest if:

**a.** you own more than 20% of a company's stock.
**b.** you are the president of the company.
**c.** you use the equity method.
**d.** you own more than 50% of a company's stock.

**9. (LO 2)** Which of the following statements is **false**? Consolidated financial statements are useful to:

**a.** determine the profitability of specific subsidiaries.
**b.** determine the total profitability of companies under common control.
**c.** determine the breadth of a parent company's operations.
**d.** determine the full extent of total obligations of companies under common control.

**10. (LO 3)** At the end of the first year of operations, the total cost of the trading securities portfolio is $120,000. Total fair value is $115,000. The financial statements should show:

**a.** a reduction of an asset of $5,000 and a realized loss of $5,000.
**b.** a reduction of an asset of $5,000 and an unrealized loss of $5,000 in the stockholders' equity section.
**c.** a reduction of an asset of $5,000 in the current assets section and an unrealized loss of $5,000 in "Other expenses and losses."
**d.** a reduction of an asset of $5,000 in the current assets section and a realized loss of $5,000 in "Other expenses and losses."

**11. (LO 3)** At December 31, 2020, the fair value of available-for-sale debt securities is $41,300 and the cost is $39,800. At January 1, 2020, there was a credit balance of $900 in the Fair Value Adjustment—Available-for-Sale account. The required adjusting entry would be:

**a.** Debit Fair Value Adjustment—Available-for-Sale for $1,500 and credit Unrealized Gain or Loss—Equity for $1,500.
**b.** Debit Fair Value Adjustment—Available-for-Sale for $600 and credit Unrealized Gain or Loss—Equity for $600.
**c.** Debit Fair Value Adjustment—Available-for-Sale for $2,400 and credit Unrealized Gain or Loss—Equity for $2,400.
**d.** Debit Unrealized Gain or Loss—Equity for $2,400 and credit Fair Value Adjustment—Available-for-Sale for $2,400.

**12. (LO 3)** If a company wants to increase its reported income by manipulating its investment accounts, which should it do?

**a.** Sell its "winner" trading securities and hold its "loser" trading securities.
**b.** Hold its "winner" trading securities and sell its "loser" trading securities.

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**c.** Sell its "winner" available-for-sale securities and hold its "loser" available-for-sale securities.

**d.** Hold its "winner" available-for-sale securities and sell its "loser" available-for-sale securities.

**13.** **(LO 3)** In the balance sheet, a debit balance in Unrealized Gain or Loss—Equity is reported as a(n):

**a.** increase to stockholders' equity.

**b.** decrease to stockholders' equity.

**c.** loss in the income statement.

**d.** loss in the retained earnings statement.

**14.** **(LO 3)** Short-term debt investments must be readily marketable and expected to be sold within:

**a.** 3 months from the date of purchase.

**b.** the next year or operating cycle, whichever is shorter.

**c.** the next year or operating cycle, whichever is longer.

**d.** the operating cycle.

### Solutions

**1. d.** Corporations are not required to by law to invest in debt and equity securities. The other choices are reasons why corporations invest in debt and equity securities.

**2. a.** When debt investments are purchased, they are recorded at cost, not (b) cost plus accrued interest, (c) fair value, or (d) face value.

**3. b.** Credits are made to Debt Investments $26,000 and Gain on Sale of Debt Investments $2,000 ($28,000 − $26,000). The other choices are therefore incorrect.

**4. c.** Because the cash received ($42,000) is greater than the cost ($39,500), this sale results in a gain, not a loss, which will be reported under "Other revenues and gains" in the income statement. The other choices are therefore incorrect.

**5. a.** The equity method is used when the investor can exercise significant influence and owns between 20% and 50% of the investee's common stock. The other choices are therefore incorrect.

**6. b.** Horicon records the acquisition of the stock investment by debiting Stock Investments $300,000 and crediting Cash $300,000. Then, Horicon records (1) its share in Sheboygan Corp.'s net income ($160,000 × .25) by debiting Stock Investments $40,000 and crediting Revenue from Stock Investments $40,000 and (2) the reduction in the investment account for the dividends received ($60,000 × .25) by debiting Cash $15,000 and crediting Stock Investments $15,000. Thus, the balance in the investment account on December 31 will be $325,000 ($300,000 + $40,000 − $15,000), not (a) $300,000, (c) $400,000, or (d) $340,000.

**7. c.** Horicon records the receipt of the dividend from Sheboygan by debiting Cash and crediting Stock Investments. The other choices are therefore incorrect.

**8. d.** You have a controlling interest if you own more than 50% of a company's stock, not (a) 20% of a company's stock, (b) are president of the company, or (c) use the equity method.

**9. a.** Consolidated financial statements are not useful in determining the profitability of specific subsidiaries (legal entities) because consolidated financial statements represent the results of the single economic entity. The other choices are true statements.

**10. c.** The difference between the fair value ($115,000) and total cost ($120,000) of trading securities at the end of the first year would result in a reduction of an asset of $5,000 through the valuation allowance account in the current assets section and an unrealized loss of $5,000 in "Other expenses and losses." The other choices are therefore incorrect.

**11. c.** In this case, there is an unrealized gain of $1,500 because total fair value of $41,300 is $1,500 greater than the total cost of $39,800. The desired balance in the market adjustment account is $1,500 debit. The required adjusting entry considers the existing credit balance of $900 and is a debit to Fair Value Adjustment—Available-for-Sale for $2,400 ($1,500 + $900) and a credit to Unrealized Gain or Loss—Equity for $2,400 ($1,500 + $900). The other choices are therefore incorrect.

**12. c.** When a company sells its winners as related to available-for-sale securities, it has a realized gain that increases net income. Selling the winners will affect the balance in Unrealized Holding Gain or Loss—Equity, but any change in this balance does not affect net income. Choices (a) and (b) are incorrect because trading securities' gains and losses related to changes in valuation are reported in net income. Thus, when a company sells a trading security, it should have no effect on net income because the value change was recognized in net income previously. Choice (d) is incorrect because selling the losing available-for-sale securities will decrease net income.

**13. b.** A debit balance in Unrealized Gain or Loss—Equity is reported on the balance sheet as a separate component of stockholders' equity, decreasing stockholders' equity. The other choices are therefore incorrect.

**14. c.** Short-term investments are current assets that are expected to be consumed, sold, or converted to cash within one year or the operating cycle, whichever is longer. The other choices are therefore incorrect.

## Practice Brief Exercises

*Journalize entries for debt investments.*

**1.** **(LO 1)** Liriano Corporation purchased debt investments for 85,000 on January 1, 2020. On July 1, 2020, Liriano received cash interest of $6,800. Journalize the purchase and the receipt of interest. Assume that no interest has been accrued.

### Solution

| | | | | |
|---|---|---|---|---|
| 1. Jan. 1 | Debt Investments | | 85,000 | |
| | Cash | | | 85,000 |
| July 1 | Cash | | 6,800 | |
| | Interest Revenue | | | 6,800 |

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**2. (LO 2)** On June 1, Willyjuan Company buys 2,000 shares of Minaya common stock for $57,000 cash. On October 15, Willyjuan sells the stock investments for $54,000 in cash. Journalize the purchase and sale of the common

*Journalize entries for stock investments.*

### Solution

| | | | | |
|---|---|---|---|---|
| **2.** June 1 | Stock Investments | | 57,000 | |
| | Cash | | | 57,000 |
| Oct. 15 | Cash | | 54,000 | |
| | Loss on Sale of Stock Investments | | 3,000 | |
| | Stock Investments | | | 57,000 |

**3. (LO 3)** **Financial Statement** The cost of the trading securities of Dylan Company at December 31, 2020, is $46,000. At December 31, 2020, the fair value of the securities is $50,000. (a) Prepare the adjusting entry to record the securities at fair value. (b) Show the financial statement presentation at December 31, 2020.

*Prepare adjusting entry and indicate statement presentation using fair value.*

### Solution

| | | | | |
|---|---|---|---|---|
| **3. a.** Dec. 31 | Fair value Adjustment—Trading | | 4,000 | |
| | Unrealized Gain or Loss Income ($50,000 – $46,000) | | | 4,000 |

**b.**

**Balance Sheet**

Current assets
Short-term investments, at fair value $50,000

**Income Statement**

Other revenues and gains
Unrealized gain—income $4,000

## Practice Exercises

**1. (LO 1)** Potter Company purchased 50 Quinn Company 6%, 10-year, $1,000 bonds on January 1, 2020, for $50,000. The bonds pay interest annually. On January 1, 2021, after receipt of interest, Potter Company sold 30 of the bonds for $28,100.

*Journalize debt investment transactions, accrue interest, and record sale.*

**Instructions**

Prepare the journal entries to record the transactions described above.

### Solution

**1.**

| | | | |
|---|---|---|---|
| **January 1, 2020** | | | |
| Debt Investments | | 50,000 | |
| Cash | | | 50,000 |
| **December 31, 2020** | | | |
| Interest Receivable | | 3,000 | |
| Interest Revenue ($50,000 × 6%) | | | 3,000 |
| **January 1, 2021** | | | |
| Cash | | 3,000 | |
| Interest Receivable | | | 3,000 |
| **January 1, 2021** | | | |
| Cash | | 28,100 | |
| Loss on Sale of Debt Investments | | 1,900 | |
| Debt Investments (30/50 × $50,000) | | | 30,000 |

**2. (LO 2)** Lucy Inc. had the following transactions in 2020 pertaining to investments in common stock.

*Journalize transactions for investments in stocks.*

Jan. 1 Purchased 4,000 shares of Morgan Corporation common stock (5% interest) for $180,000 cash.
July 1 Received a cash dividend of $3 per share.
Dec. 1 Sold 600 shares of Morgan Corporation common stock for $32,000 cash.
Dec. 31 Received a cash dividend of $3 per share.

**Instructions**

Journalize the transactions.

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### Solution

**2.**

| | | | |
|---|---|---|---|
| **January 1, 2020** | | | |
| Stock Investments | 180,000 | | |
| Cash | | | 180,000 |
| **July 1, 2020** | | | |
| Cash (4,000 × $3) | 12,000 | | |
| Dividend Revenue | | | 12,000 |
| **December 1, 2020** | | | |
| Cash | 32,000 | | |
| Stock Investments ($180,000 × 600/4,000) | | | 27,000 |
| Gain on Sale of Stock Investments | | | 5,000 |
| **December 31, 2020** | | | |
| Cash [(4,000 − 600) × $3] | 10,200 | | |
| Dividend Revenue | | | 10,200 |

*Prepare adjusting entries for fair value, and indicate statement presentation for two classes of securities.*

**3. (LO 3)** **Financial Statement** Remy Company started business on January 1, 2020, and has the following data at December 31, 2020.

| Securities | Cost | Fair Value |
|---|---|---|
| Trading | $120,000 | $132,000 |
| Available-for-sale | 100,000 | 86,000 |

The available-for-sale securities are held as a long-term investment.

#### Instructions

**a.** Prepare the adjusting entries to report each class of securities at fair value.

**b.** Indicate the statement presentation of each class of securities and the related unrealized gain (loss) accounts.

### Solution

**3.**

**a.**

| | | | |
|---|---|---|---|
| **December 31, 2020** | | | |
| Fair Value Adjustment—Trading ($132,000 − $120,000) | 12,000 | | |
| Unrealized Gain or Loss—Income | | | 12,000 |
| Unrealized Gain or Loss—Equity ($100,000 − $86,000) | 14,000 | | |
| Fair Value Adjustment—Available-for-Sale | | | 14,000 |

**b.**

| | |
|---|---|
| **Balance Sheet** | |
| Current assets | |
| Short-term investments, at fair value | $132,000 |
| Investments | |
| Debt investment, at fair value | 86,000 |
| Stockholders' equity | |
| Less: Accumulated other comprehensive income | $ (14,000) |
| **Income Statement** | |
| Other revenues and gains | |
| Unrealized gain—income | $ 12,000 |

## Practice Problem

*Journalize transactions and prepare adjusting entry to record fair value.*

**(LO 2, 3)** In its first year of operations, DeMarco Company had the following selected transactions in stock investments (holdings less than 20%).

June 1 Purchased for cash 600 shares of Sanburg common stock at $24 per share.
July 1 Purchased for cash 800 shares of Cey Corporation common stock at $33 per share.
Sept. 1 Received a $1 per share cash dividend from Cey Corporation.
Nov. 1 Sold 200 shares of Sanburg common stock for cash at $27 per share.
Dec. 15 Received a $0.50 per share cash dividend on Sanburg common stock.

At December 31, the fair values per share were Sanburg $25 and Cey $30.

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**Instructions**

**a.** Journalize the transactions.

**b.** Prepare the adjusting entry at December 31 to report the securities at fair value.

**Solution**

| | | | | |
|---|---|---|---|---|
| **a.** June 1 | Stock Investments | | 14,400 | |
| | Cash (600 × $24) | | | 14,400 |
| | (To record purchase of 600 shares of Sanburg common stock) | | | |
| July 1 | Stock Investments | | 26,400 | |
| | Cash (800 × $33) | | | 26,400 |
| | (To record purchase of 800 shares of Cey common stock) | | | |
| Sept. 1 | Cash (800 × $1.00) | | 800 | |
| | Dividend Revenue | | | 800 |
| | (To record receipt of $1 per share cash dividend from Cey Corporation) | | | |
| Nov. 1 | Cash (200 × $27) | | 5,400 | |
| | Stock Investments (200 × $24) | | | 4,800 |
| | Gain on Sale of Stock Investments | | | 600 |
| | (To record sale of 200 shares of Sanburg common stock) | | | |
| Dec. 15 | Cash [(600 – 200) × $0.50] | | 200 | |
| | Dividend Revenue | | | 200 |
| | (To record receipt of $0.50 per share dividend from Sanburg) | | | |
| **b.** Dec. 31 | Unrealized Gain or Loss—Income | | 2,000 | |
| | Fair Value Adjustment—Stock | | | 2,000 |
| | (To record unrealized loss on trading securities) | | | |

| Investment | Cost | Fair Value | Unrealized Gain (Loss) |
|---|---|---|---|
| Sanburg common stock | $ 9,600[a] | $10,000[b] | $ 400 |
| Cey common stock | 26,400[c] | 24,000[d] | (2,400) |
| Totals | $36,000 | $34,000 | $(2,000) |

[a]400 × $24; [b]400 × $25; [c]800 × $33; [d]800 × $30

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

## Questions

1. What are the reasons that corporations invest in securities?
2. **a.** What is the cost of an investment in bonds?

   **b.** When is interest on bonds recorded?
3. Alex Ramirez is confused about losses and gains on the sale of debt investments. Explain to Alex (a) how the gain or loss is computed, and (b) the statement presentation of the gains and losses.
4. Seibel Company sells Mayo's bonds costing $40,000 for $45,000, including $500 of accrued interest. Seibel records a $5,000 gain on this sale. Is this correct? Explain.
5. What is the cost of an investment in stock?
6. To acquire Peoples Corporation stock, J. Rich pays $62,000 in cash. What entry should be made for this investment?

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**7.** (a) When should a long-term investment in common stock be accounted for by the equity method? (b) When is revenue recognized under this method?

**8.** Ling Corporation uses the equity method to account for its ownership of 35% of the common stock of Gorman Packing. During 2020, Gorman reported a net income of $80,000 and declares and pays cash dividends of $10,000. What recognition should Ling Corporation give to these events?

**9.** What constitutes "significant influence" when an investor's financial interest is below the 50% level?

**10.** Distinguish between the cost and equity methods of accounting for investments in stocks.

**11.** What are consolidated financial statements?

**12.** What are the valuation guidelines for trading and available-for-sale debt investments at a balance sheet date?

**13.** Jill Ernst is the controller of J-Products, Inc. At December 31, the end of its first year of operations, the company's investments in trading debt securities cost $74,000 and have a fair value of $72,000. Indicate how Jill would report these data in the financial statements prepared on December 31.

**14.** Using the data in Question 13, how would Jill report the data if the investments were long-term and the debt securities were classified as available-for-sale?

**15.** Boise Company's investments in equity securities at December 31 show total cost of $200,000 and total fair value of $210,000. Boise has less than a 20% ownership interest in the equity securities. Prepare the adjusting entry.

**16.** Where is Accumulated Other Comprehensive Loss reported on the balance sheet?

**17.** Bargain Wholesale Supply owns stock in Cyrus Corporation, which it intends to hold indefinitely because of some negative tax consequences if sold. Should the investment in Cyrus be classified as a short-term investment? Why?

## Brief Exercises

*Journalize entries for debt investments.*

**BE16.1 (LO 1)** Ownbey Corporation purchased debt investments for $52,000 on January 1, 2020. On July 1, 2020, Ownbey received cash interest of $2,340. Journalize the purchase and the receipt of interest. Assume that no interest has been accrued.

*Journalize entries for stock investments.*

**BE16.2 (LO 2)** On August 1, Shaw Company buys 1,000 shares of Estrada common stock for $37,000 cash. On December 1, Shaw sells the stock investments for $40,000 in cash. Journalize the purchase and sale of the common stock.

*Record transactions under the equity method of accounting.*

**BE16.3 (LO 2)** Noler Company owns 25% of Lauer Company. For the current year, Lauer reports net income of $180,000 and declares and pays a $50,000 cash dividend. Record Noler's equity in Lauer's net income and the receipt of dividends from Lauer.

*Prepare adjusting entry using fair value.*

**BE16.4 (LO 3)** The cost of the trading debt securities of Munoz Company at December 31, 2020, is $64,000. At December 31, 2020, the fair value of the securities is $59,000. Prepare the adjusting entry to record the securities at fair value.

*Indicate statement presentation using fair value.*

**BE16.5 (LO 3)** **Financial Statement** For the data presented in BE16.4, show the financial statement presentation of the trading securities and related accounts.

*Prepare adjusting entry using fair value.*

**BE16.6 (LO 3)** In its first year of operations, Godfrey Corporation purchased, as a long-term investment, available-for-sale debt securities costing $72,000. At December 31, 2020, the fair value of the securities is $68,000. Prepare the adjusting entry to record the securities at fair value.

*Indicate statement presentation using fair value.*

**BE16.7 (LO 3)** **Financial Statement** For the data presented in BE16.6, show the financial statement presentation of the securities and related accounts. Assume the securities are noncurrent.

*Prepare investments section of balance sheet.*

**BE16.8 (LO 3)** **Financial Statement** Kruger Corporation has the following long-term investments. (1) Common stock of Eidman Co. (10% ownership), cost $108,000, fair value $115,000. (2) Common stock of Pickerill Inc. (30% ownership), cost $210,000, equity $260,000. (3) Debt investment, cost $90,000, fair value $150,000. Prepare the investments section of the balance sheet.

*Journalize transactions under cost and equity methods.*

**BE16.9 (LO 2, 3)** Christina Corporation purchased 400 shares of Nolan Inc. common stock for $13,200 (Christina does not have significant influence). During the year, Nolan paid a cash dividend of $3.25 per share. At year-end, Nolan stock was selling for $34.50 per share. Prepare Christina's journal entries to

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record (a) the purchase of the investment, (b) the dividends received, and (c) the fair value adjustment. (Assume a zero balance in the Fair Value Adjustment account.)

**BE16.10 (LO 3)** Detroit Company has a stock portfolio valued at $6,000. Its cost was $4,000. If the Fair Value Adjustment account has a debit balance of $300, prepare the journal entry at year-end. *Prepare journal entries for trading securities.*

## DO IT! Exercises

**DO IT! 16.1 (LO 1)** Kurtyka Corporation had the following transactions relating to debt investments: *Make entries for bond investment.*

| | |
|---|---|
| Jan. 1, 2020 | Purchased 50, $1,000, 10% Spiller Company bonds for $50,000. Interest is payable annually on January 1. |
| Dec. 31, 2020 | Accrued interest on Spiller Company bonds. |
| Jan. 1, 2021 | Received interest from Spiller Company bonds. |
| Jan. 1, 2021 | Sold 30 Spiller Company bonds for $29,000. |

Journalize the above transactions, including the adjusting entry for the accrual of interest on December 31, 2020.

**DO IT! 16.2 (LO 2)** Presented below are two independent situations: *Make journal entries for stock investments.*

1. Edelman Inc. acquired 10% of the 500,000 shares of common stock of Schuberger Corporation at a total cost of $11 per share on June 17, 2020. On September 3, Schuberger declared and paid a $160,000 dividend. On December 31, Schuberger reported net income of $550,000 for the year.
2. Wen Corporation obtained significant influence over Hunsaker Company by buying 30% of Hunsaker's 100,000 outstanding shares of common stock at a cost of $18 per share on January 1, 2020. On May 15, Hunsaker declared and paid a cash dividend of $150,000. On December 31, Hunsaker reported net income of $270,000 for the year.

Prepare all necessary journal entries for 2020 for (a) Edelman and (b) Wen.

**DO IT! 16.3a (LO 3)** Some of Tollakson Corporation's investments in debt securities are classified as trading securities and some are classified as available-for-sale. The cost and fair value of each category at December 31, 2020, were as follows. *Make journal entries for trading and available-for-sale securities.*

| | Cost | Fair Value | Unrealized Gain (Loss) |
|---|---|---|---|
| Trading securities | $96,300 | $84,900 | $(11,400) |
| Available-for-sale securities | $59,000 | $63,200 | $ 4,200 |

At December 31, 2019, the Fair Value Adjustment—Trading account had a debit balance of $3,200, and the Fair Value Adjustment—Available-for-Sale account had a credit balance of $5,750. Prepare the required journal entries for each group of securities for December 31, 2020.

**DO IT! 16.3b (LO 3)** **Financial Statement** Identify where each of the following items would be reported in the financial statements. *Indicate financial statement presentation of investments.*

1. Loss on sale of investments in stock.
2. Unrealized gain or loss—equity.
3. Fair value adjustment—trading.
4. Interest earned on investments in bonds.
5. Unrealized loss on trading securities.

Use the following possible categories:

*Balance sheet:*

| | |
|---|---|
| Current assets | Current liabilities |
| Investments | Long-term liabilities |
| Property, plant, and equipment | Stockholders' equity |
| Intangible assets | |

*Income statement:*

| | |
|---|---|
| Other revenues and gains | Other expenses and losses |

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## Exercises

*Understand debt and stock investments.*

**E16.1 (LO 1)** Mr. Taliaferro is studying for an accounting test and has developed the following questions about investments.

1. What are three reasons why companies purchase investments in debt or stock securities?
2. Why would a corporation have excess cash that it does not need for operations?
3. What is the typical investment when investing cash for short periods of time?
4. What are the typical investments when investing cash to generate earnings?
5. Why would a company invest in securities that provide no current cash flows?
6. What is the typical stock investment when investing cash for strategic reasons?

**Instructions**

Provide answers for Mr. Taliaferro.

*Journalize debt investment transactions and accrue interest.*

**E16.2 (LO 1)** Jenek Corporation had the following transactions pertaining to debt investments.

1. Purchased 40 Leeds Co. 9% bonds (each with a face value of $1,000) for $40,000 cash. Interest is payable annually on January 1, 2020.
2. Accrued interest on Leeds Co. bonds on December 31, 2020.
3. Received interest on Leeds Co. bonds on January 1, 2021.
4. Sold 30 Leeds Co. bonds for $33,000 on January 1, 2021.

**Instructions**

Journalize the transactions.

*Journalize debt investment transactions, accrue interest, and record sale.*

**E16.3 (LO 1)** Flynn Company purchased 70 Rinehart Company 6%, 10-year, $1,000 bonds on January 1, 2020, for $70,000. The bonds pay interest annually on January 1. On January 1, 2021, after receipt of interest, Flynn Company sold 40 of the bonds for $38,500.

**Instructions**

Prepare the journal entries to record the transactions described above.

*Journalize stock investment transactions.*

**E16.4 (LO 2)** **Financial Statement** Hulse Company had the following transactions pertaining to stock investments.

| | | |
|---|---|---|
| Feb. | 1 | Purchased 600 shares of Wade common stock (2%) for $7,200 cash. |
| July | 1 | Received cash dividends of $1 per share on Wade common stock. |
| Sept. | 1 | Sold 300 shares of Wade common stock for $4,300. |
| Dec. | 1 | Received cash dividends of $1 per share on Wade common stock. |

**Instructions**

**a.** Journalize the transactions.

**b.** Explain how dividend revenue and the gain (loss) on sale should be reported in the income statement.

*Journalize transactions for investments in stocks.*

**E16.5 (LO 2)** Nosker Inc. had the following transactions pertaining to investments in common stock.

| | | |
|---|---|---|
| Jan. | 1 | Purchased 2,500 shares of Escalante Corporation common stock (5%) for $152,000 cash. |
| July | 1 | Received a cash dividend of $3 per share. |
| Dec. | 1 | Sold 500 shares of Escalante Corporation common stock for $32,000 cash. |
| Dec. | 31 | Received a cash dividend of $3 per share. |

**Instructions**

Journalize the transactions.

*Journalize transactions for investments in stocks.*

**E16.6 (LO 2)** On February 1, Rinehart Company purchased 500 shares (2% ownership) of Givens Company common stock for $32 per share. On March 20, Rinehart Company sold 100 shares of Givens stock for $2,900. Rinehart received a dividend of $1.00 per share on April 25. On June 15, Rinehart sold 200 shares of Givens stock for $7,600. On July 28, Rinehart received a dividend of $1.25 per share.

**Instructions**

Prepare the journal entries to record the transactions described above.

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**E16.7 (LO 2)** On January 1, Zabel Corporation purchased a 25% equity in Helbert Corporation for $180,000. At December 31, Helbert declared and paid a $60,000 cash dividend and reported net income of $200,000.

*Journalize and post transactions, under the equity method.*

### Instructions

**a.** Journalize the transactions.

**b.** Determine the amount to be reported as an investment in Helbert stock at December 31.

**E16.8 (LO 2, 3)** The following are two independent situations.

*Journalize entries under cost and equity methods.*

1. Gambino Cosmetics acquired 10% of the 200,000 shares of common stock of Nevins Fashion at a total cost of $13 per share on March 18, 2020. On June 30, Nevins declared and paid a $60,000 dividend. On December 31, Nevins reported net income of $122,000 for the year. At December 31, the market price of Nevins Fashion was $15 per share.
2. Kanza, Inc., obtained significant influence over Rogan Corporation by buying 40% of Rogan's 30,000 outstanding shares of common stock at a total cost of $9 per share on January 1, 2020. On June 15, Rogan declared and paid a cash dividend of $30,000. On December 31, Rogan reported a net income of $80,000 for the year.

### Instructions

Prepare all the necessary journal entries for 2020 for (a) Gambino Cosmetics and (b) Kanza, Inc.

**E16.9 (LO 2)** Writing Agee Company purchased 70% of the outstanding common stock of Himes Corporation.

*Understand the usefulness of consolidated statements.*

### Instructions

**a.** Explain the relationship between Agee Company and Himes Corporation.

**b.** How should Agee account for its investment in Himes?

**c.** Why is the accounting treatment described in (b) useful?

**E16.10 (LO 3)** Financial Statement At December 31, 2020, the trading debt securities for Storrer, Inc. are as follows.

*Prepare adjusting entry to record fair value, and indicate statement presentation.*

Excel

| Security | Cost | Fair Value |
|---|---|---|
| A | $17,500 | $16,000 |
| B | 12,500 | 14,000 |
| C | 23,000 | 21,000 |
| | $53,000 | $51,000 |

### Instructions

**a.** Prepare the adjusting entry at December 31, 2020, to report the securities at fair value.

**b.** Show the balance sheet and income statement presentation at December 31, 2020, after adjustment to fair value.

**E16.11 (LO 3)** Financial Statement Writing Data for debt investments classified as trading securities are presented in E16.10. Assume instead that the investments are classified as available-for-sale debt securities. They have the same cost and fair value as indicated in E16.10. The securities are considered to be a long-term investment.

*Prepare adjusting entry to record fair value, and indicate statement presentation.*

### Instructions

**a.** Prepare the adjusting entry at December 31, 2020, to report the securities at fair value.

**b.** Show the statement presentation at December 31, 2020, after adjustment to fair value.

**c.** E. Kretsinger, a member of the board of directors, does not understand the reporting of the unrealized gains or losses. Write a letter to Ms. Kretsinger explaining the reporting and the purposes that it serves.

**E16.12 (LO 3)** Financial Statement Uttinger Company has the following data at December 31, 2020.

*Prepare adjusting entries for fair value, and indicate statement presentation for two classes of securities.*

| Securities | Cost | Fair Value |
|---|---|---|
| Trading | $120,000 | $126,000 |
| Available-for-sale | 100,000 | 96,000 |

The available-for-sale securities are held as a long-term investment.

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**Instructions**

**a.** Prepare the adjusting entries to report each class of securities at fair value.

**b.** Indicate the statement presentation of each class of securities and the related unrealized gain (loss) accounts.

## Problems: Set A

*Journalize debt investment transactions and show financial statement presentation.*

**P16.1A (LO 1, 3)** **Financial Statement** Vilander Carecenters Inc. provides financing and capital to the healthcare industry, with a particular focus on nursing homes for the elderly. The following selected transactions relate to bonds acquired as an investment by Vilander, whose fiscal year ends on December 31.

**2020**

Jan. 1 Purchased at face value $2,000,000 of Javier Nursing Centers, Inc., 10-year, 8% bonds dated January 1, 2020, directly from Javier.
Dec. 31 Accrual of interest at year-end on the Javier bonds.

(Assume that all intervening transactions and adjustments have been properly recorded and that the number of bonds owned has not changed from December 31, 2020, to December 31, 2022.)

**2023**

Jan. 1 Received the annual interest on the Javier bonds.
Jan. 1 Sold $1,000,000 Javier bonds at 106.
Dec. 31 Accrual of interest at year-end on the Javier bonds.

**Instructions**

a. Gain on sale of debt investment $60,000

**a.** Journalize the listed transactions for the years 2020 and 2023.

**b.** Assume that the fair value of the bonds at December 31, 2020, was $2,200,000. These bonds are classified as available-for-sale securities. Prepare the adjusting entry to record these bonds at fair value.

**c.** Based on your analysis in part (b), show the balance sheet presentation of the bonds and interest receivable at December 31, 2020. Assume the investments are considered long-term. Indicate where any unrealized gain or loss is reported in the financial statements.

*Journalize investment transactions, prepare adjusting entry, and show statement presentation.*

GLS

**P16.2A (LO 2, 3)** **Financial Statement** In January 2020, the management of Kinzie Company concludes that it has sufficient cash to permit some short-term investments in debt and equity securities. During the year, the following transactions occurred.

Feb. 1 Purchased 600 shares of Muninger common stock for $32,400.
Mar. 1 Purchased 800 shares of Tatman common stock for $20,000.
Apr. 1 Purchased 50 of $1,000, 7% Yoakem bonds for $50,000. Interest is payable semiannually on April 1 and October 1.
July 1 Received a cash dividend of $0.60 per share on the Muninger common stock.
Aug. 1 Sold 200 shares of Muninger common stock at $58 per share.
Sept. 1 Received a $1 per share cash dividend on the Tatman common stock.
Oct. 1 Received the semiannual interest on the Yoakem bonds.
Oct. 1 Sold the Yoakem bonds for $49,000.

At December 31, the fair value of the Muninger common stock was $55 per share. The fair value of the Tatman common stock was $24 per share.

**Instructions**

a. Gain on sale of stock investment $800

**a.** Journalize the transactions and post to the accounts Debt Investments and Stock Investments. (Use the T-account form.)

**b.** Prepare the adjusting entry at December 31, 2020, to report the investment securities at fair value. All securities are considered to be trading securities.

**c.** Show the balance sheet presentation of investment securities at December 31, 2020.

**d.** Identify the income statement accounts and give the statement classification of each account.

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**P16.3A (LO 2, 3)** **Financial Statement** On December 31, 2020, Turnball Associates owned the following securities, held as a long-term investment. The securities are not held for influence or control of the investee.

*Journalize transactions and adjusting entry for stock investments.*

Excel

| Common Stock | Shares | Cost |
|---|---|---|
| Gehring Co. | 2,000 | $60,000 |
| Wooderson Co. | 5,000 | 45,000 |
| Kitselton Co. | 1,500 | 30,000 |

On December 31, 2020, the total fair value of the securities was equal to its cost. In 2021, the following transactions occurred.

Aug. 1 Received $0.50 per share cash dividend on Gehring Co. common stock.
Sept. 1 Sold 1,500 shares of Wooderson Co. common stock for cash at $8 per share.
Oct. 1 Sold 800 shares of Gehring Co. common stock for cash at $33 per share.
Nov. 1 Received $1 per share cash dividend on Kitselton Co. common stock.
Dec. 15 Received $0.50 per share cash dividend on Gehring Co. common stock.
31 Received $1 per share annual cash dividend on Wooderson Co. common stock.

At December 31, the fair values per share of the common stocks were: Gehring Co. $32, Wooderson Co. $8, and Kitselton Co. $18.

### Instructions

**a.** Journalize the 2021 transactions and post to the account Stock Investments. (Use the T-account form.)

**b.** Prepare the adjusting entry at December 31, 2021, to show the securities at fair value.

b. Unrealized loss $4,100

**c.** Show the balance sheet presentation of the investments at December 31, 2021. At this date, Turnball Associates has common stock $1,500,000 and retained earnings $1,000,000.

**P16.4A (LO 2, 3)** Heidebrecht Design acquired 20% of the outstanding common stock of Quayle Company on January 1, 2020, by paying $800,000 for the 30,000 shares. Quayle declared and paid $0.30 per share cash dividends on March 15, June 15, September 15, and December 15, 2020. Quayle reported net income of $320,000 for the year. At December 31, 2020, the market price of Quayle common stock was $34 per share.

*Prepare entries under the cost and equity methods, and tabulate differences.*

### Instructions

**a.** Prepare the journal entries for Heidebrecht Design for 2020 assuming Heidebrecht Design cannot exercise significant influence over Quayle.

a. Total dividend revenue $36,000

**b.** Prepare the journal entries for Heidebrecht Design for 2020, assuming Heidebrecht Design can exercise significant influence over Quayle. Use the equity method.

b. Revenue from stock investments $64,000

**c.** Indicate the balance sheet and income statement account balances at December 31, 2020, under each method of accounting.

**P16.5A (LO 2, 3)** **Financial Statement** The following securities are in Frederick Company's portfolio of long-term securities at December 31, 2020.

*Journalize stock investment transactions and show statement presentation.*

| | Cost |
|---|---|
| 1,000 shares of Willhite Corporation common stock | $52,000 |
| 1,400 shares of Hutcherson Corporation common stock | 84,000 |
| 1,200 shares of Downing Corporation preferred stock | 33,600 |

On December 31, 2020, the total cost of the portfolio equaled total fair value. Frederick had the following transactions related to the securities during 2021.

Jan. 20 Sold all 1,000 shares of Willhite Corporation common stock at $55 per share.
28 Purchased 400 shares of $70 par value common stock of Liggett Corporation at $78 per share.
30 Received a cash dividend of $1.15 per share on Hutcherson Corp. common stock.
Feb. 8 Received cash dividends of $0.40 per share on Downing Corp. preferred stock.
18 Sold all 1,200 shares of Downing Corp. preferred stock at $27 per share.
July 30 Received a cash dividend of $1.00 per share on Hutcherson Corp. common stock.
Sept. 6 Purchased an additional 900 shares of $10 par value common stock of Liggett Corporation at $82 per share.
Dec. 1 Received a cash dividend of $1.50 per share on Liggett Corporation common stock.

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At December 31, 2021, the fair values of the securities were:

| | |
|---|---|
| Hutcherson Corporation common stock | $64 per share |
| Liggett Corporation common stock | $72 per share |

**Instructions**

a. Loss on sale of stock investment $1,200

c. Unrealized loss $5,800

**a.** Prepare journal entries to record the transactions.

**b.** Post to the investment account. (Use a T-account.)

**c.** Prepare the adjusting entry at December 31, 2021 to report the portfolio at fair value.

**d.** Show the balance sheet presentation at December 31, 2021, for the investment-related accounts.

*Prepare a balance sheet.*

**P16.6A (LO 3)** **Financial Statement** The following data, presented in alphabetical order, are taken from the records of Nieto Corporation.

| | |
|---|---|
| Accounts payable | $ 260,000 |
| Accounts receivable | 140,000 |
| Accumulated depreciation—buildings | 180,000 |
| Accumulated depreciation—equipment | 52,000 |
| Allowance for doubtful accounts | 6,000 |
| Bonds payable (10%, due 2028) | 500,000 |
| Buildings | 950,000 |
| Cash | 62,000 |
| Common stock ($10 par value; 500,000 shares authorized, 150,000 shares issued) | 1,500,000 |
| Dividends payable | 80,000 |
| Equipment | 275,000 |
| Goodwill | 200,000 |
| Income taxes payable | 120,000 |
| Inventory | 170,000 |
| Investment in Mara common stock (30% ownership), at equity | 380,000 |
| Investment in Sasse common stock, at fair value | 300,000 |
| Land | 390,000 |
| Notes payable (due 2021) | 70,000 |
| Paid-in capital in excess of par—common stock | 130,000 |
| Premium on bonds payable | 40,000 |
| Prepaid insurance | 16,000 |
| Retained earnings | 125,000 |
| Short-term investments, at fair value | 180,000 |

The investment in Sasse common stock is considered to be a long-term security.

**Instructions**

Total assets $2,825,000

Prepare a classified balance sheet at December 31, 2020.

## Continuing Case

### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 15.)

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**CC16** Natalie has been approached by Ken Thornton, a shareholder of The Beanery Coffee Inc. Ken wants to retire and would like to sell his 1,000 shares in The Beanery Coffee, which represents 30% of all shares issued. The Beanery is currently operated by Ken's twin daughters, who each own 35% of the common shares. The Beanery not only operates a coffee shop but also roasts and sells beans to retailers, under the name "Rocky Mountain Beanery."

Ken has met with Curtis and Natalie to discuss the business operation. All have concluded that there would be many advantages for Cookie & Coffee Creations Inc. to acquire an interest in The Beanery Coffee. Despite the apparent advantages, however, Natalie and Curtis are still not convinced that they should participate in this business venture.

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## Ethics Case

**EC16** Harding Financial Services Company holds a large portfolio of debt and equity securities as an investment. The total fair value of the portfolio at December 31, 2020, is greater than total cost. Some securities have increased in value and others have decreased. Ann Bales, the financial vice president, and Kim Reeble, the controller, are in the process of classifying for the first time the securities in the portfolio.

Bales suggests classifying the securities that have increased in value as trading securities in order to increase net income for the year. She wants to classify the securities that have decreased in value as long-term available-for-sale securities, so that the decreases in value will not affect 2020 net income.

Reeble disagrees. She recommends classifying the securities that have decreased in value as trading securities and those that have increased in value as long-term available-for-sale securities. Reeble argues that the company is having a good earnings year and that recognizing the losses now will help to smooth income for this year. Moreover, for future years, when the company may not be as profitable, the company will have built-in gains.

### Instructions

**a.** Will classifying the securities as Bales and Reeble suggest actually affect earnings as each says it will?

**b.** Is there anything unethical in what Bales and Reeble propose? Who are the stakeholders affected by their proposals?

**c.** Assume that Bales and Reeble properly classify the portfolio. At year-end, Bales proposes to sell the securities that will increase 2020 net income, and that Reeble proposes to sell the securities that will decrease 2020 net income. Is this unethical?

## Comprehensive Accounting Cycle Review

**ACR16** Writing **Part I** Debby Kauffman and her two colleagues, Jamie Hiatt and Ella Rincon, are personal trainers at an upscale health spa/resort in Tampa, Florida. They want to start a health club that specializes in health plans for people in the 50+ age range. The growing population in this age range and strong consumer interest in the health benefits of physical activity have convinced them they can profitably operate their own club. In addition to many other decisions, they need to determine what type of business organization they want. Jamie believes there are more advantages to the corporate form than a partnership, but he hasn't yet convinced Debby and Ella. They have come to you, a small-business consulting specialist, seeking information and advice regarding the choice of starting a partnership versus a corporation.

### Instructions

**a.** Prepare a memo (dated May 26, 2019) that describes the advantages and disadvantages of both partnerships and corporations. Advise Debby, Jamie, and Ella regarding which organizational form you believe would better serve their purposes. Make sure to include reasons supporting your advice.

**Part II** After deciding to incorporate, each of the three investors receives 20,000 shares of $2 par common stock on June 12, 2019, in exchange for their co-owned building ($200,000 fair value) and $100,000 total cash they contributed to the business. The next decision that Debby, Jamie, and Ella need to make is how to obtain financing for renovation and equipment. They understand the difference between equity securities and debt securities, but do not understand the tax, net income, and earnings per share consequences of equity versus debt financing on the future of their business.

### Instructions

**b.** Prepare notes for a discussion with the three entrepreneurs in which you will compare the consequences of using equity versus debt financing. As part of your notes, show the differences in interest and tax expense assuming $1,400,000 is financed with common stock, and then alternatively with debt. Assume that when common stock is used, 140,000 shares will be issued. When debt is used, assume the interest rate on debt is 9%, the tax rate is 32%, and income before interest and taxes is $300,000. (You may want to use an electronic spreadsheet.)

**Part III** During the discussion about financing, Ella mentions that one of her clients, Timothy Hansen, has approached her about buying a significant interest in the new club. Having an interested investor

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sways the three to issue equity securities to provide the financing they need. On July 21, 2019, Mr. Hansen buys 90,000 shares at a price of $10 per share.

The club, LifePath Fitness, opens on January 12, 2020, and after a slow start begins to produce the revenue desired by the owners. The owners decide to pay themselves a stock dividend since cash has been less than abundant since they opened their doors. The 10% stock dividend is declared by the owners on July 27, 2020. The market price of the stock is $3 on the declaration date. The date of record is July 31, 2020 (there have been no changes in stock ownership since the initial issuance), and the issue date is August 15, 2020. By the middle of the fourth quarter of 2020, the cash flow of LifePath Fitness has improved to the point that the owners feel ready to pay themselves a cash dividend. They declare a $0.05 cash dividend on December 4, 2020. The record date is December 14, 2020, and the payment date is December 24, 2020.

### Instructions

**c.** (1) Record all of the transactions related to the common stock of LifePath Fitness during the years 2019 and 2020. (2) Indicate how many shares are issued and outstanding after the stock dividend is issued.

**Part IV** Since the club opened, a major concern has been the pool facilities. Although the existing pool is adequate, Debby, Jamie, and Ella all desire to make LifePath a cutting-edge facility. Until the end of 2020, financing concerns prevented this improvement. However, because there has been steady growth in clientele, revenue, and income since the third quarter of 2020, the owners have explored possible financing options. They are hesitant to issue stock and change the ownership mix because they have been able to work together as a team with great effectiveness. They have formulated a plan to issue secured term bonds to raise the needed $600,000 for the pool facilities. By the end of December 2020, everything was in place for the bond issue to go ahead. On January 1, 2021, the $600,000 face value bonds were issued. The bonds pay annual interest of 6% on January 1 of each year. The bonds mature in 10 years, and amortization is computed using the straight-line method.

### Instructions

**d.** Record (1) the issuance of the secured bonds, (2) the adjusting entry required at December 31, 2021, (3) the interest payment made on January 1, 2022, and (4) the interest accrued on December 31, 2022.

**Part V** Mr. Hansen's purchase of the stock of LifePath Fitness was done through his business. The stock investment has always been accounted for using the cost method on his firm's books. However, early in 2022 he decided to take his company public. He is preparing an IPO (initial public offering), and he needs to have the firm's financial statements audited. One of the issues to be resolved is to restate the stock investment in LifePath Fitness using the equity method since Mr. Hansen's ownership percentage is greater than 20%.

### Instructions

**e.** (1) Give the entries that would have been made on Hansen's books if the equity method of accounting for investments had been used from the initial investment through 2021. Assume the following data for LifePath. (*Hint:* Hanson owns 40% of LifePath.)

| | 2019 | 2020 | 2021 |
|---|---|---|---|
| Net income | $30,000 | $70,000 | $105,000 |
| Total cash dividends | $ 0 | $ 8,250 | $ 30,000 |

(2) Compute the balance in the Stock Investment account (as it relates to LifePath Fitness) at the end of 2021.

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT16.1** The annual report of **Apple Inc.** is presented in Appendix A. The complete annual report, including the notes to the financial statements, is available at the company's website.

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### Instructions

**a.** Determine the percentage increase for (1) short-term marketable securities from 2014 to 2015, and (2) long-term marketable securities from 2014 to 2015.

**b.** Using Apple's consolidated statement of cash flows, determine:

**1.** Purchases of marketable securities during the current year.

**2.** How much was spent for business acquisitions, net of cash acquired during the current year.

## Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT16.2** **PepsiCo**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

### Instructions

Based on the information contained in these financial statements, determine the net cash used in investing (investment) activities for the current year (from the statement of cash flows) for each company.

## Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT16.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

### Instructions

Based on the information contained in these financial statements, determine the net cash used in investing activities for each company.

## Real-World Focus

**CT16.4** Most publicly traded companies are examined by numerous analysts. These analysts often don't agree about a company's future prospects. In this exercise, you will find analysts' ratings about companies and make comparisons over time and across companies in the same industry. You will also see to what extent the analysts experienced "earnings surprises." Earnings surprises can cause changes in stock prices.

### Instructions

Go to the **Yahoo! Finance** website and then select a company. Use the website's resources to answer the following questions.

**a.** How many analysts rated the company?

**b.** What percentage rated it a strong buy?

**c.** What was the average rating for the week?

**d.** Did the average rating improve or decline relative to the previous week?

**e.** What was the amount of the earnings surprise percentage during the last quarter?

## Decision-Making Across the Organization

**CT16.5** At the beginning of the question-and-answer portion of the annual stockholders' meeting of Neosho Corporation, stockholder John Linton asks, "Why did management sell the holdings in JMB Company at a loss when this company has been very profitable during the period Neosho held its stock?"

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Since president Tony Cedeno has just concluded his speech on the recent success and bright future of Neosho, he is taken aback by this question and responds, "I remember we paid $1,300,000 for that stock some years ago. I am sure we sold that stock at a much higher price. You must be mistaken."

Linton retorts, "Well, right here in footnote number 7 to the annual report it shows that 240,000 shares, a 30% interest in JMB, were sold on the last day of the year. Also, it states that JMB earned $520,000 this year and paid out $160,000 in cash dividends. Further, a summary statement indicates that in past years, while Neosho held JMB stock, JMB earned $1,240,000 and paid out $440,000 in dividends. Finally, the income statement for this year shows a loss on the sale of JMB stock of $180,000. So, I doubt that I am mistaken."

Red-faced, president Cedeno turns to you.

### Instructions

With the class divided into groups, answer the following.

**a.** What dollar amount did Neosho receive upon the sale of the JMB stock?

**b.** Explain why both stockholder Linton and president Cedeno are correct.

## Communication Activity

**CT16.6** Fegan Corporation has purchased two securities for its portfolio. The first is a stock investment in Plummer Corporation, one of its suppliers. Fegan purchased 10% of Plummer with the intention of holding it for a number of years, but has no intention of purchasing more shares. The second investment was a purchase of debt securities. Fegan purchased the debt securities because its analysts believe that changes in market interest rates will cause these securities to increase in value in a short period of time. Fegan intends to sell the securities as soon as they have increased in value.

### Instructions

Write a memo to Sam Nichols, the chief financial officer, explaining how to account for each of these investments. Explain what the implications for reported income are from this accounting treatment.

## All About You

**CT16.7** The **Securities and Exchange Commission** (SEC) is the primary regulatory agency of U.S. financial markets. Its job is to ensure that the markets remain fair for all investors.

### Instructions

**a.** Go to the SEC website and find the definition of the following terms.

1. Ask price.
2. Margin.
3. Prospectus.
4. Index fund.

**b.** Search the SEC site for "investor quiz" and then take the money smarts quiz.

## FASB Codification Activity

**CT16.8** If your school has a subscription to the FASB Codification, log in and prepare responses to the following.

**a.** What is the definition of a trading security?

**b.** What is the definition of an available-for-sale security?

**c.** What is definition of a holding gain or loss?

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# A Look at IFRS

**LEARNING OBJECTIVE 4**

Compare the accounting for investments under GAAP and IFRS.

Until recently, when the IASB issued *IFRS 9,* the accounting and reporting for investments under IFRS and GAAP were for the most part very similar. However, *IFRS 9* introduces a new framework for classifying investments.

## Key Points

Following are the similarities and differences between GAAP and IFRS as related to investments.

### Similarities

- The basic accounting entries to record the acquisition of debt securities, the receipt of interest, and the sale of debt securities are the same under IFRS and GAAP.
- The basic accounting entries to record the acquisition of stock investments, the receipt of dividends, and the sale of stock securities are the same under IFRS and GAAP.
- Both IFRS and GAAP use the same criteria to determine whether the equity method of accounting should be used—that is, significant influence with a general guide of over 20% ownership, IFRS uses the term **associate investment** rather than equity investment to describe its investment under the equity method.
- Equity investments are generally recorded and reported at fair value under IFRS. Equity investments do not have a fixed interest or principal payment schedule and therefore cannot be accounted for at amortized cost. In general, equity investments are valued at fair value, with all gains and losses reported in income, similar to GAAP.

### Differences

- Under IFRS, both the investor and an associate company should follow the same accounting policies. As a result, in order to prepare financial information, adjustments are made to the associate's policies to conform to the investor's books. GAAP does not have that requirement.
- In general, IFRS requires that companies determine how to measure their financial assets based on two criteria:
  - The company's business model for managing their financial assets; and
  - The contractual cash flow characteristics of the financial asset.

  If a company has (1) a business model whose objective is to hold assets in order to collect contractual cash flows and (2) the contractual terms of the financial asset gives specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding, then the company should use cost (often referred to as amortized cost).

  For example, assume that **Mitsubishi** purchases a bond investment that it intends to hold to maturity (held-for-collection). Its business model for this type of investment is to collect interest and then principal at maturity. The payment dates for the interest rate and principal are stated on the bond. In this case, Mitsubishi accounts for the investment at cost. If, on the other hand, Mitsubishi purchased the bonds as part of a trading strategy to speculate on interest rate changes (a trading investment), then the debt investment is reported at fair value. As a result, only debt investments such as receivables, loans, and bond investments that meet the two criteria above are recorded at amortized cost. All other debt investments are recorded and reported at fair value.
- Unrealized gains and losses related to available-for-sale shares are reported in other comprehensive income under IFRS. These gains and losses that accumulate are then reported in the statement of financial position. Under GAAP, unrealized gains and losses on shares are reported as part of net income.

## Looking to the Future

As indicated earlier, the IASB has issued a new revised IFRS which deals with the accounting issues related to investment securities. The FASB has also issued a new standard in this area. Some differences exist between the IFRS and the FASB regarding investments, but in general they are very similar.

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## IFRS Practice

### IFRS Self-Test Questions

1. The following asset is **not** considered a financial investment under IFRS:

   **a.** trading securities.

   **b.** equity securities.

   **c.** held-for-collection securities.

   **d.** inventories.

2. Under IFRS, the equity method of accounting for long-term investments in common stock should be used when the investor has significant influence over an investee and owns:

   **a.** between 20% and 50% of the investee's common stock.

   **b.** 30% or more of the investee's common stock.

   **c.** more than 50% of the investee's common stock.

   **d.** less than 20% of the investee's common stock.

3. Under IFRS, the unrealized loss on trading investments should be reported:

   **a.** as part of other comprehensive loss reducing net income.

   **b.** on the income statement reducing net income.

   **c.** as part of other comprehensive loss not affecting net income.

   **d.** directly to stockholders' equity bypassing the income statement.

### Answers to IFRS Self-Test Questions

**1.** d **2.** a **3.** b

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# Statement of Cash Flows

## Chapter Preview

The balance sheet, income statement, and retained earnings statement do not always show the whole picture of the financial condition of a company or institution. In fact, looking at the financial statements of some well-known companies, a thoughtful investor might ask questions like these: How did **Eastman Kodak** finance cash dividends of $649 million in a year in which it earned only $17 million? How could **United Air Lines** purchase new planes that cost $1.9 billion in a year in which it reported a net loss of over $2 billion? How did the companies that spent a combined fantastic $3.4 trillion on mergers and acquisitions in a recent year finance those deals? Answers to these and similar questions can be found in this chapter, which presents the statement of cash flows.

## Feature Story

### Got Cash?

Companies must be ready to respond to changes quickly in order to survive and thrive. This requires careful management of cash. One company that managed cash successfully in its early years was **Microsoft**. During those years, the company paid much of its payroll with stock options (rights to purchase company stock in the future at a given price) instead of cash. This conserved cash and turned more than a thousand of its employees into millionaires.

In recent years, Microsoft has had a different kind of cash problem. Now that it has reached a more "mature" stage in life,

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it generates so much cash—roughly $1 billion per month—that it cannot always figure out what to do with it. At one time, Microsoft had accumulated $60 billion.

The company said it was accumulating cash to invest in new opportunities, buy other companies, and pay off pending lawsuits. Microsoft's stockholders complained that holding all this cash was putting a drag on the company's profitability. Why? Because Microsoft had the cash invested in very low-yielding government securities. Stockholders felt that the company either should find new investment projects that would bring higher returns, or return some of the cash to stockholders.

Finally, Microsoft announced a plan to return cash to stockholders by paying a special one-time $32 billion dividend. This special dividend was so large that, according to the U.S. Commerce Department, it caused total personal income in the United States to rise by 3.7% in one month—the largest increase ever recorded by the agency. (It also made the holiday season brighter, especially for retailers in the Seattle area.) Microsoft also doubled its regular annual dividend to $3.50 per share. Further, it announced that it would spend another $30 billion buying treasury stock.

**Apple** also has encountered this cash "problem." Recently, Apple had nearly $100 billion in liquid assets (cash, cash equivalents, and investment securities). The company was generating $37 billion of cash per year from its operating activities but spending only about $7 billion on plant assets and purchases of patents. In response to shareholder pressure, Apple announced that it would begin to pay a quarterly dividend of $2.65 per share and buy back up to $10 billion of its stock. Analysts noted that the dividend consumes only $10 billion of cash per year. This leaves Apple wallowing in cash. The rest of us should have such problems.

**Source:** "Business: An End to Growth? Microsoft's Cash Bonanza," *The Economist* (July 23, 2005), p. 61.

# Chapter Outline

## LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Discuss the usefulness and format of the statement of cash flows. | • Usefulness of the statement of cash flows<br>• Classification of cash flows<br>• Significant noncash activities<br>• Format of the statement of cash flows | **DO IT! 1** Classification of Cash Flows |
| **LO 2** Prepare a statement of cash flows using the indirect method. | • Indirect and direct methods<br>• Indirect method—Computer Services Company<br>• Step 1: Operating activities<br>• Summary of conversion to net cash provided by operating activities<br>• Step 2: Investing and financing activities<br>• Step 3: Net change in cash | **DO IT! 2a** Cash from Operating Activities<br>**DO IT! 2b** Indirect Method |
| **LO 3** Analyze the statement of cash flows. | • Free cash flow | **DO IT! 3** Free Cash Flow |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with Orion for additional tutorials and practice opportunities.**

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# Usefulness and Format of the Statement of Cash Flows

**LEARNING OBJECTIVE 1**

Discuss the usefulness and format of the statement of cash flows.

The balance sheet, income statement, and retained earnings statement provide only limited information about a company's cash flows (cash receipts and cash payments). For example, comparative balance sheets show the net increase in property, plant, and equipment during the year. But, they do not show how the additions were financed or paid for. The income statement shows net income based on the accrual basis of accounting. But, it does not indicate the amount of cash generated by operating activities. The retained earnings statement shows cash dividends declared but not the cash dividends paid during the year. None of these statements presents a detailed summary of where cash came from and how it was used.

## Usefulness of the Statement of Cash Flows

The **statement of cash flows** reports the cash receipts, cash payments, and net change in cash resulting from operating, investing, and financing activities during a period. The information in a statement of cash flows helps investors, creditors, and others assess the following.

1. **The entity's ability to generate future cash flows.** By examining relationships between items in the statement of cash flows, investors can better predict the amounts, timing, and uncertainty of future cash flows than they can from accrual-basis data.
2. **The entity's ability to pay dividends and meet obligations.** If a company does not have adequate cash, it cannot pay employees, settle debts, or pay dividends. Employees, creditors, and stockholders should be particularly interested in this statement because it alone shows the flows of cash in a business.
3. **The reasons for the difference between net income and net cash provided (used) by operating activities.** Net income provides information on the success or failure of a business. However, some financial statement users are critical of accrual-basis net income because it requires many estimates (see **Ethics Note**). As a result, users often challenge the reliability of the number. Such is not the case with cash. Many readers of the statement of cash flows want to know the reasons for the difference between net income and net cash provided by operating activities. Then, they can assess for themselves the reliability of the income number.
4. **The cash investing and financing transactions during the period.** By examining a company's investing and financing transactions, a financial statement reader can better understand why assets and liabilities changed during the period.

**ETHICS NOTE**

**Though we discourage reliance on cash flows to the exclusion of accrual accounting, comparing net cash provided by operating activities to net income can reveal important information about the "quality" of reported net income. Such a comparison can reveal the extent to which net income provides a good measure of actual performance.**

## Classification of Cash Flows

The statement of cash flows classifies cash receipts and cash payments as operating, investing, and financing activities. Transactions and other events characteristic of each kind of activity are as follows.

1. **Operating activities** include the cash effects of transactions that create revenues and expenses. They thus enter into the determination of net income.
2. **Investing activities** include (a) acquiring and disposing of investments and property, plant, and equipment, and (b) lending money and collecting the loans.
3. **Financing activities** include (a) obtaining cash from issuing debt and repaying the amounts borrowed, and (b) obtaining cash from stockholders, repurchasing shares, and paying dividends.

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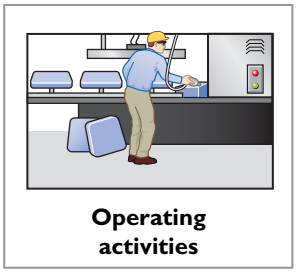
The operating activities category is the most important. It shows the cash provided by company operations. This source of cash is generally considered to be the best measure of a company's ability to generate sufficient cash to continue as a going concern.

Illustration 17.1 lists typical cash receipts and cash payments within each of the three classifications. **Study the list carefully.** It will prove very useful in solving homework exercises and problems.

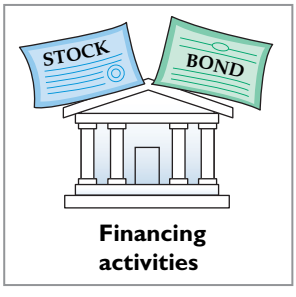
**ILLUSTRATION 17.1**

**Typical receipt and payment classifications**



Operating activities

Investing activities




Financing activities

**TYPES OF CASH INFLOWS AND OUTFLOWS**

**Operating activities—Income statement items**

Cash inflows:
- From sale of goods or services.
- From interest received and dividends received.

Cash outflows:
- To suppliers for inventory.
- To employees for wages.
- To government for taxes.
- To lenders for interest.
- To others for expenses.

**Investing activities—Changes in investments and long-term assets**

Cash inflows:
- From sale of property, plant, and equipment.
- From sale of investments in debt or equity securities of other entities.
- From collection of principal on loans to other entities.

Cash outflows:
- To purchase property, plant, and equipment.
- To purchase investments in debt or equity securities of other entities.
- To make loans to other entities.

**Financing activities—Changes in long-term liabilities and stockholders' equity**

Cash inflows:
- From sale of common stock.
- From issuance of debt (bonds and notes).

Cash outflows:
- To stockholders as dividends.
- To redeem long-term debt or reacquire capital stock (treasury stock).

Note the following general guidelines:

1. Operating activities involve income statement items.
2. Investing activities involve cash flows resulting from changes in investments and long-term asset items.
3. Financing activities involve cash flows resulting from changes in long-term liability and stockholders' equity items.

Companies classify as operating activities some cash flows related to investing or financing activities. For example, receipts of investment revenue (interest and dividends) are classified as operating activities. So are payments of interest to lenders. Why are these considered operating activities? **Because companies report these items in the income statement, where results of operations are shown.**

## Significant Noncash Activities

Not all of a company's significant activities involve cash. Examples of significant noncash activities are as follows.

1. Direct issuance of common stock to purchase assets.
2. Conversion of bonds into common stock.

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3. Direct issuance of debt to purchase assets.
4. Exchanges of plant assets.

**Companies do not report in the body of the statement of cash flows significant financing and investing activities that do not affect cash.** Instead, they report these activities in either a **separate schedule** at the bottom of the statement of cash flows or in a **separate note or supplementary schedule** to the financial statements (see **Helpful Hint**). The reporting of these noncash activities in a separate schedule satisfies the **full disclosure principle**.

*In solving homework assignments, you should present significant noncash investing and financing activities in a separate schedule at the bottom of the statement of cash flows (see the last item in Illustration 17.2 below).*

**HELPFUL HINT**

**Do not include noncash investing and financing activities in the body of the statement of cash flows. Report this information in a separate schedule.**

## Accounting Across the Organization — Target Corporation

Darren McCollester/Getty Images, Inc.

### Net *What*?

Net income is not the same as net cash provided by operating activities. The table shows some results from recent annual reports (dollars in millions), including **Target Corporation**. Note how the numbers differ greatly across the list even though all these companies engage in retail merchandising.

| Company | Net Income | Net Cash Provided by Operating Activities |
|---|---|---|
| Kohl's Corporation | $ 889 | $ 1,884 |
| Wal-Mart Stores, Inc. | 16,669 | 25,591 |
| J. C. Penney Company, Inc. | (1,388) | (1,814) |
| Costco Wholesale Corp. | 20,391 | 3,437 |
| Target Corporation | 1,971 | 6,520 |

**In general, why do differences exist between net income and net cash provided by operating activities? (Go to WileyPLUS for this answer and additional questions.)**

# Format of the Statement of Cash Flows

The general format of the statement of cash flows presents the results of the three activities discussed previously—operating, investing, and financing—plus the significant noncash investing and financing activities. **Illustration 17.2** shows a widely used form of the statement of cash flows.

**Company Name**
**Statement of Cash Flows**
**For the Period Covered**

| | | |
|---|---|---|
| **Cash flows from operating activities** | | |
| (List of individual items) | XX | |
| Net cash provided (used) by operating activities | | XXX |
| **Cash flows from investing activities** | | |
| (List of individual inflows and outflows) | XX | |
| Net cash provided (used) by investing activities | | XXX |
| **Cash flows from financing activities** | | |
| (List of individual inflows and outflows) | XX | |
| Net cash provided (used) by financing activities | | XXX |
| **Net increase (decrease) in cash** | | XXX |
| **Cash at beginning of period** | | XXX |
| **Cash at end of period** | | XXX |
| **Noncash investing and financing activities** | | |
| (List of individual noncash transactions) | | XXX |

**ILLUSTRATION 17.2**
**Format of statement of cash flows**

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The cash flows from operating activities section always appears first, followed by the investing activities section and then the financing activities section. The sum of the operating, investing, and financing sections equals the net increase or decrease in cash for the period. This amount is added to the beginning cash balance to arrive at the ending cash balance—the same amount reported on the balance sheet.

### DO IT! 1 | Classification of Cash Flows

During its first week, Duffy & Stevenson Company had these transactions.

1. Issued 100,000 shares of $5 par value common stock for $800,000 cash.
2. Borrowed $200,000 from Castle Bank, signing a 5-year note bearing 8% interest.
3. Purchased two semi-trailer trucks for $170,000 cash.
4. Paid employees $12,000 for salaries and wages.
5. Collected $20,000 cash for services performed.

Classify each of these transactions by type of cash flow activity. (*Hint:* Refer to Illustration 17.1.)

**Solution**

1. Financing activity.
2. Financing activity.
3. Investing activity.
4. Operating activity.
5. Operating activity.

Related exercise material: **BE17.1, BE17.2, BE17.3, DO IT! 17.1, E17.1, E17.2, and E17.3.**

**ACTION PLAN**

- Identify the three types of activities used to report all cash inflows and outflows.
- Report as operating activities the cash effects of transactions that create revenues and expenses and enter into the determination of net income.
- Report as investing activities transactions that (a) acquire and dispose of investments and long-term assets and (b) lend money and collect loans.
- Report as financing activities transactions that (a) obtain cash from issuing debt and repay the amounts borrowed and (b) obtain cash from stockholders and pay them dividends.

## Preparing the Statement of Cash Flows—Indirect Method

**LEARNING OBJECTIVE 2**

Prepare a statement of cash flows using the indirect method.

Companies prepare the statement of cash flows differently from the three other basic financial statements. First, it is not prepared from an adjusted trial balance. It requires detailed information concerning the changes in account balances that occurred between two points in time. An adjusted trial balance will not provide the necessary data. Second, the statement of cash flows deals with cash receipts and payments. As a result, the company **adjusts** the effects of the use of accrual accounting **to determine cash flows**.

The information to prepare this statement usually comes from three sources:

- **Comparative balance sheets.** Information in the comparative balance sheets indicates the amount of the changes in assets, liabilities, and stockholders' equity from the beginning to the end of the period.
- **Current income statement.** Information in this statement helps determine the amount of net cash provided or used by operating activities during the period.
- **Additional information.** Such information includes transaction data that are needed to determine how cash was provided or used during the period.

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Preparing the statement of cash flows from these data sources involves three major steps, explained in **Illustration 17.3**.

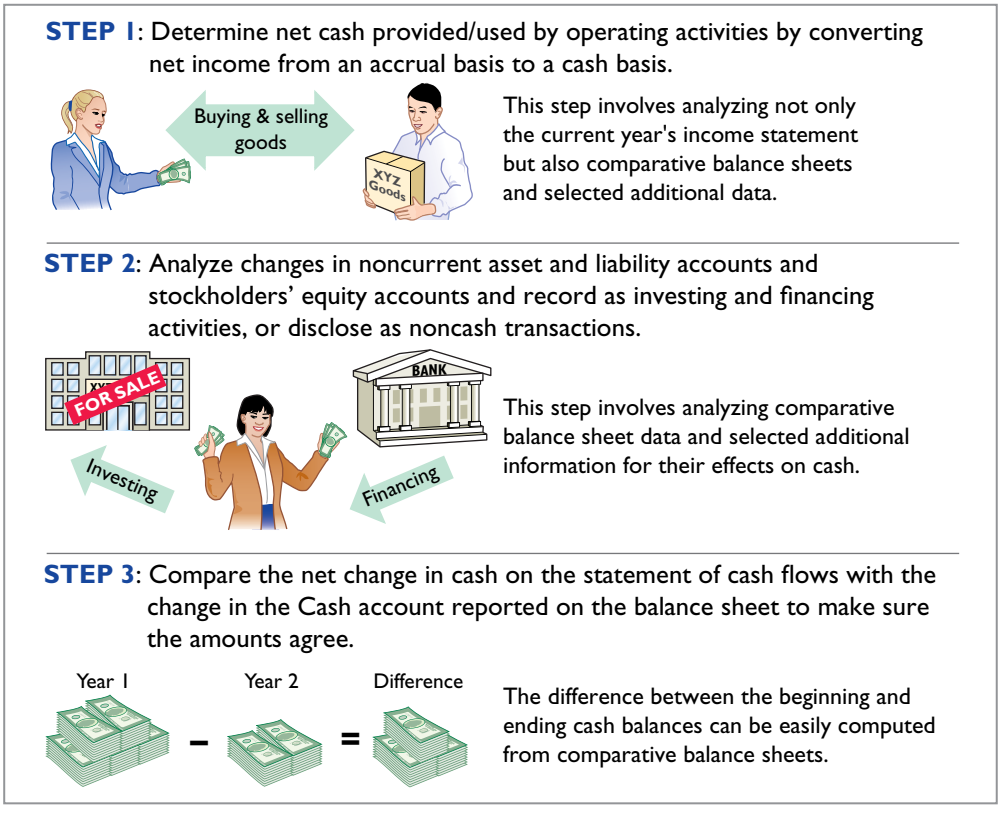
STEP 1: Determine net cash provided/used by operating activities by converting net income from an accrual basis to a cash basis.
Buying & selling goods
XYZ Goods
This step involves analyzing not only the current year's income statement but also comparative balance sheets and selected additional data.
STEP 2: Analyze changes in noncurrent asset and liability accounts and stockholders' equity accounts and record as investing and financing activities, or disclose as noncash transactions.
FOR SALE
BANK
Investing
Financing
This step involves analyzing comparative balance sheet data and selected additional information for their effects on cash.
STEP 3: Compare the net change in cash on the statement of cash flows with the change in the Cash account reported on the balance sheet to make sure the amounts agree.
Year 1
Year 2
Difference
The difference between the beginning and ending cash balances can be easily computed from comparative balance sheets.

**ILLUSTRATION 17.3**
**Three major steps in preparing the statement of cash flows**

## Indirect and Direct Methods

In order to perform Step 1, a company **must convert net income from an accrual basis to a cash basis**. This conversion may be done by either of two methods: (1) the indirect method or (2) the direct method. **Both methods arrive at the same amount** for "Net cash provided by operating activities." They differ in **how** they arrive at the amount.

The **indirect method** adjusts net income for items that do not affect cash. A great majority of companies (98%) use this method. Companies favor the indirect method for two reasons: (1) it is easier and less costly to prepare, and (2) it focuses on the differences between net income and net cash flow from operating activities.

The **direct method** shows operating cash receipts and payments. It is prepared by adjusting each item in the income statement from the accrual basis to the cash basis. The FASB has expressed a preference for the direct method but allows the use of either method.

The next section illustrates the more popular indirect method. Appendix 17A illustrates the direct method.

## Indirect Method—Computer Services Company

To explain how to prepare a statement of cash flows using the indirect method, we use financial information from Computer Services Company. **Illustration 17.4** presents Computer Services' current- and previous-year balance sheets, its current-year income statement, and related financial information for the current year.

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**ILLUSTRATION 17.4**

**Comparative balance sheets, income statement, and additional information for Computer Services Company**

## Computer Services Company
### Comparative Balance Sheets
### December 31

| Assets | 2020 | 2019 | Change in Account Balance Increase/Decrease |
|---|---|---|---|
| Current assets | | | |
| Cash | $ 55,000 | $ 33,000 | $ 22,000 Increase |
| Accounts receivable | 20,000 | 30,000 | 10,000 Decrease |
| Inventory | 15,000 | 10,000 | 5,000 Increase |
| Prepaid expenses | 5,000 | 1,000 | 4,000 Increase |
| Property, plant, and equipment | | | |
| Land | 130,000 | 20,000 | 110,000 Increase |
| Buildings | 160,000 | 40,000 | 120,000 Increase |
| Accumulated depreciation—buildings | (11,000) | (5,000) | 6,000 Increase |
| Equipment | 27,000 | 10,000 | 17,000 Increase |
| Accumulated depreciation—equipment | (3,000) | (1,000) | 2,000 Increase |
| Total assets | $398,000 | $138,000 | |
| **Liabilities and Stockholders' Equity** | | | |
| Current liabilities | | | |
| Accounts payable | $ 28,000 | $ 12,000 | $ 16,000 Increase |
| Income taxes payable | 6,000 | 8,000 | 2,000 Decrease |
| Long-term liabilities | | | |
| Bonds payable | 130,000 | 20,000 | 110,000 Increase |
| Stockholders' equity | | | |
| Common stock | 70,000 | 50,000 | 20,000 Increase |
| Retained earnings | 164,000 | 48,000 | 116,000 Increase |
| Total liabilities and stockholders' equity | $398,000 | $138,000 | |

## Computer Services Company
### Income Statement
### For the Year Ended December 31, 2020

| | | |
|---|---|---|
| Sales revenue | | $507,000 |
| Cost of goods sold | $150,000 | |
| Operating expenses (excluding depreciation) | 111,000 | |
| Depreciation expense | 9,000 | |
| Loss on disposal of plant assets | 3,000 | |
| Interest expense | 42,000 | 315,000 |
| Income before income tax | | 192,000 |
| Income tax expense | | 47,000 |
| Net income | | $145,000 |

**Additional information for 2020:**

1. Depreciation expense was comprised of $6,000 for building and $3,000 for equipment.
2. The company sold equipment with a book value of $7,000 (cost $8,000, less accumulated depreciation $1,000) for $4,000 cash.
3. Issued $110,000 of long-term bonds in direct exchange for land.
4. A building costing $120,000 was purchased for cash. Equipment costing $25,000 was also purchased for cash.
5. Issued common stock for $20,000 cash.
6. The company declared and paid a $29,000 cash dividend.

We now apply the three steps for preparing a statement of cash flows to the information provided for Computer Services Company.

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# Step 1: Operating Activities

## Determine Net Cash Provided/Used by Operating Activities by Converting Net Income from an Accrual Basis to a Cash Basis

To determine net cash provided by operating activities under the indirect method, companies **adjust net income in numerous ways**. A useful starting point is to understand **why** net income must be converted to net cash provided by operating activities.

Under generally accepted accounting principles, most companies use the accrual basis of accounting. This basis requires that companies record revenue when a performance obligation is satisfied and record expenses when incurred. Revenues include credit sales for which the company has not yet collected cash. Expenses incurred include some items that have not yet been paid in cash. Thus, under the accrual basis, net income is not the same as net cash provided by operating activities.

Therefore, under the **indirect method**, companies must adjust net income to convert certain items to the cash basis. The indirect method (or reconciliation method) starts with net income and converts it to net cash provided by operating activities. **Illustration 17.5** lists the three types of adjustments.

| Net Income | +/− | Adjustments | = | Net Cash Provided/ Used by Operating Activities |
|---|---|---|---|---|
| | | • **Add back noncash expenses**, such as depreciation expense and amortization expense.<br>• **Deduct gains and add losses** that resulted from investing and financing activities.<br>• **Analyze changes** to noncash current asset and current liability accounts. | | |

**ILLUSTRATION 17.5**
**Three types of adjustments to convert net income to net cash provided by operating activities**

We explain the three types of adjustments in the next three sections.

### Depreciation Expense

Computer Services' income statement reports depreciation expense of $9,000. Although depreciation expense reduces net income, it does not reduce cash. In other words, depreciation expense is a noncash charge. The company must add it back to net income to negate the effect of the expense to arrive at net cash provided by operating activities (see **Helpful Hint**). Computer Services reports depreciation expense in the statement of cash flows as in **Illustration 17.6**.

**HELPFUL HINT**
**Depreciation is similar to any other expense in that it reduces net income. It differs in that it does not involve a current cash outflow. That is why it must be *added back* to net income to arrive at net cash provided by operating activities.**

| | |
|---|---|
| Cash flows from operating activities | |
| Net income | $145,000 |
| Adjustments to reconcile net income to net cash provided by operating activities: | |
| **Depreciation expense** | **9,000** |
| Net cash provided by operating activities | $154,000 |

**ILLUSTRATION 17.6**
**Adjustment for depreciation**

As the first adjustment to net income in the statement of cash flows, companies frequently list depreciation and similar noncash charges such as amortization of intangible assets and bad debt expense.

### Loss on Disposal of Plant Assets

Illustration 17.1 states that cash received from the sale (disposal) of plant assets is reported in the investing activities section. Because of this, **companies eliminate from net income all gains and losses related to the disposal of plant assets, to arrive at net cash provided by operating activities**.

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In our example, Computer Services' income statement reports a $3,000 loss on the disposal of plant assets (book value $7,000, less $4,000 cash received from disposal of plant assets). The company's loss of $3,000 should be added to net income in order to determine net cash provided by operating activities. The loss reduced net income but did not reduce cash. **Illustration 17.7** shows that the $3,000 loss is eliminated by adding $3,000 back to net income to arrive at net cash provided by operating activities.

**ILLUSTRATION 17.7**
**Adjustment for loss on disposal of plant assets**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Net income | | $145,000 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | |
| Depreciation expense | $9,000 | |
| **Loss on disposal of plant assets** | **3,000** | 12,000 |
| Net cash provided by operating activities | | $157,000 |

If a gain on disposal occurs, the company deducts the gain from net income in order to determine net cash provided by operating activities. **In the case of either a gain or a loss, companies report as a source of cash in the investing activities section of the statement of cash flows the actual amount of cash received from the sale.**

## Changes to Noncash Current Asset and Current Liability Accounts

A final adjustment in reconciling net income to net cash provided by operating activities involves examining all changes in current asset and current liability accounts. The accrual-accounting process records revenues in the period in which the performance obligation is satisfied and expenses as incurred. For example, Accounts Receivable reflects amounts owed to the company for sales that have been made but for which cash collections have not yet been received. Prepaid Insurance reflects insurance that has been paid for but which has not yet expired (therefore has not been expensed). Similarly, Salaries and Wages Payable reflects salaries and wages expense that has been incurred but has not been paid.

As a result, companies need to adjust net income for these accruals and prepayments to determine net cash provided by operating activities. Thus, they must analyze the change in each current asset and current liability account to determine its impact on net income and cash.

**Changes in Noncash Current Assets.** The adjustments required for changes in noncash current asset accounts are as follows. **Deduct from net income increases in current asset accounts, and add to net income decreases in current asset accounts, to arrive at net cash provided by operating activities.** We observe these relationships by analyzing the accounts of Computer Services.

**Decrease in Accounts Receivable.** Computer Services' accounts receivable decreased by $10,000 (from $30,000 to $20,000) during the period. For Computer Services, this means that cash receipts were $10,000 higher than sales revenue. The Accounts Receivable account in **Illustration 17.8** shows that Computer Services had $507,000 in sales revenue (as reported on the income statement), but it collected $517,000 in cash.

**ILLUSTRATION 17.8**
**Analysis of accounts receivable**

**Accounts Receivable**

| | | | | |
|---|---|---|---|---|
| 1/1/20 | Balance | 30,000 | **Receipts from customers** | **517,000** |
| | **Sales revenue** | **507,000** | | |
| 12/31/20 | Balance | 20,000 | | |

As shown in Illustration 17.9, to adjust net income to net cash provided by operating activities, the company adds to net income the decrease of $10,000 in accounts receivable. When the Accounts Receivable balance increases, cash receipts are lower than sales revenue earned under the accrual basis. Therefore, the company deducts from net income the amount of the increase in accounts receivable, to arrive at net cash provided by operating activities.

**Increase in Inventory.** Computer Services' inventory increased $5,000 (from $10,000 to $15,000) during the period. The change in the Inventory account reflects the difference between the amount of inventory purchased and the amount sold. For Computer Services, this means that

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the cost of merchandise purchased exceeded the cost of goods sold by $5,000. As a result, cost of goods sold does not reflect $5,000 of cash payments made for merchandise. The company deducts from net income this inventory increase of $5,000 during the period, to arrive at net cash provided by operating activities (see Illustration 17.9). If inventory decreases, the company adds to net income the amount of the change, to arrive at net cash provided by operating activities.

**Increase in Prepaid Expenses.** Computer Services' prepaid expenses increased during the period by $4,000. This means that cash paid for expenses is higher than expenses reported on an accrual basis. In other words, the company has made cash payments in the current period that will not be charged to expenses until future periods. To adjust net income to net cash provided by operating activities, the company deducts from net income the $4,000 increase in prepaid expenses (see **Illustration 17.9**).

**ILLUSTRATION 17.9**
**Adjustments for changes in current asset accounts**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Net income | | $145,000 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | |
| Depreciation expense | $ 9,000 | |
| Loss on disposal of plant assets | 3,000 | |
| **Decrease in accounts receivable** | **10,000** | |
| **Increase in inventory** | **(5,000)** | |
| **Increase in prepaid expenses** | **(4,000)** | 13,000 |
| Net cash provided by operating activities | | $158,000 |

If prepaid expenses decrease, reported expenses are higher than the expenses paid. Therefore, the company adds to net income the decrease in prepaid expenses, to arrive at net cash provided by operating activities.

**Changes in Current Liabilities.** The adjustments required for changes in current liability accounts are as follows. **Add to net income increases in current liability accounts and deduct from net income decreases in current liability accounts, to arrive at net cash provided by operating activities.**

**Increase in Accounts Payable.** For Computer Services, Accounts Payable increased by $16,000 (from $12,000 to $28,000) during the period. That means the company received $16,000 more in goods than it actually paid for. As shown in Illustration 17.10, to adjust net income to determine net cash provided by operating activities, the company adds to net income the $16,000 increase in Accounts Payable.

**Decrease in Income Taxes Payable.** When a company incurs income tax expense but has not yet paid its taxes, it records income taxes payable. A change in the Income Taxes Payable account reflects the difference between income tax expense incurred and income tax actually paid. Computer Services' Income Taxes Payable account decreased by $2,000. That means the $47,000 of income tax expense reported on the income statement was $2,000 less than the amount of taxes paid during the period of $49,000. As shown in **Illustration 17.10**, to adjust net income to a cash basis, the company must reduce net income by $2,000.

**ILLUSTRATION 17.10**
**Adjustments for changes in current liability accounts**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Net income | | $145,000 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | |
| Depreciation expense | $ 9,000 | |
| Loss on disposal of plant assets | 3,000 | |
| Decrease in accounts receivable | 10,000 | |
| Increase in inventory | (5,000) | |
| Increase in prepaid expenses | (4,000) | |
| **Increase in accounts payable** | **16,000** | |
| **Decrease in income taxes payable** | **(2,000)** | 27,000 |
| Net cash provided by operating activities | | $172,000 |

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Illustration 17.10 shows that after starting with net income of $145,000, the sum of all of the adjustments to net income was $27,000. This resulted in net cash provided by operating activities of $172,000.

## Summary of Conversion to Net Cash Provided by Operating Activities—Indirect Method

As shown in the previous illustrations, the statement of cash flows prepared by the indirect method starts with net income. It then adds or deducts items to arrive at net cash provided by operating activities. The required adjustments are of three types:

1. Noncash charges such as depreciation and amortization.
2. Gains and losses on the disposal of plant assets.
3. Changes in noncash current asset and current liability accounts.

Illustration 17.11 provides a summary of these changes and required adjustments.

**ILLUSTRATION 17.11**
**Adjustments required to convert net income to net cash provided by operating activities**

| | | Adjustments Required to Convert Net Income to Net Cash Provided by Operating Activities |
|---|---|---|
| **Noncash Charges** | Depreciation expense | Add |
| | Amortization expense | Add |
| **Gains and Losses** | Loss on disposal of plant assets | Add |
| | Gain on disposal of plant assets | Deduct |
| **Changes in Current Assets and Current Liabilities** | Increase in current asset account | Deduct |
| | Decrease in current asset account | Add |
| | Increase in current liability account | Add |
| | Decrease in current liability account | Deduct |

### Anatomy of a Fraud

For more than a decade, the top executives at the Italian dairy products company **Parmalat** engaged in multiple frauds that overstated cash and other assets by more than $1 billion while understating liabilities by between $8 and $12 billion. Much of the fraud involved creating fictitious sources and uses of cash. Some of these activities incorporated sophisticated financial transactions with subsidiaries created with the help of large international financial institutions. However, much of the fraud employed very basic, even sloppy, forgery of documents. For example, when outside auditors requested confirmation of bank accounts (such as a fake $4.8 billion account in the Cayman Islands), documents were created on scanners, with signatures that were cut and pasted from other documents. These were then passed through a fax machine numerous times to make them look real (if difficult to read). Similarly, fictitious bills were created in order to divert funds to other businesses owned by the Tanzi family (who controlled Parmalat).

#### Total take: Billions of dollars

#### The Missing Control

**Independent internal verification.** Internal auditors at the company should have independently verified bank accounts and major transfers of cash to outside companies that were controlled by the Tanzi family.

### DO IT! 2a | Cash from Operating Activities

Josh's PhotoPlus reported net income of $73,000 for 2020. Included in the income statement were depreciation expense of $7,000 and a gain on disposal of plant assets of $2,500. Josh's comparative balance sheets show the following balances.

| | 12/31/19 | 12/31/20 |
|---|---|---|
| Accounts receivable | $17,000 | $21,000 |
| Accounts payable | 6,000 | 2,200 |

Calculate net cash provided by operating activities for Josh's PhotoPlus.

**ACTION PLAN**

- Add noncash charges such as depreciation back to net income to compute net cash provided by operating activities.

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**Solution**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Net income | | $73,000 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | |
| Depreciation expense | $ 7,000 | |
| Gain on disposal of plant assets | (2,500) | |
| Increase in accounts receivable | (4,000) | |
| Decrease in accounts payable | (3,800) | (3,300) |
| Net cash provided by operating activities | | $69,700 |

Related exercise material: **BE17.4, BE17.5, BE17.6, DO IT! 17.2a, E17.4, E17.5, E17.6, and E17.7.**

**ACTION PLAN (*cont.*)**

- Deduct from net income gains on the disposal of plant assets, or add losses back to net income, to compute net cash provided by operating activities.
- Use changes in noncash current asset and current liability accounts to compute net cash provided by operating activities.

# Step 2: Investing and Financing Activities

## Analyze Changes in Noncurrent Asset and Liability Accounts and Stockholders' Equity Accounts and Record as Investing and Financing Activities, or as Noncash Investing and Financing Activities

**Increase in Land.** As indicated from the change in the Land account and the additional information, Computer Services purchased land of $110,000 by directly exchanging bonds for land. The issuance of bonds payable for land has no effect on cash. But, it is a significant noncash investing and financing activity that merits disclosure in a separate schedule (see Illustration 17.13).

**Increase in Buildings.** As the additional data indicate, Computer Services acquired an office building for $120,000 cash. This is a cash outflow reported in the investing activities section (see Illustration 17.13).

**Increase in Equipment.** The Equipment account increased $17,000. The additional information explains that this net increase resulted from two transactions: (1) a purchase of equipment of $25,000, and (2) the sale for $4,000 of equipment costing $8,000. These transactions are investing activities (see **Helpful Hint**). The company should report each transaction separately. Thus, it reports the purchase of equipment as an outflow of cash for $25,000. It reports the sale as an inflow of cash for $4,000. The T-account in **Illustration 17.12** shows the reasons for the change in this account during the year.

**HELPFUL HINT**

The investing and financing activities are measured and reported the same way under both the direct and indirect methods.

**ILLUSTRATION 17.12**

**Analysis of equipment**

| Equipment | | | | |
|---|---|---|---|---|
| 1/1/20 | Balance | 10,000 | Cost of equipment sold | 8,000 |
| | **Purchase of equipment** | **25,000** | | |
| 12/31/20 | Balance | 27,000 | | |

The following entry shows the details of the equipment sale transaction.

| | | |
|---|---|---|
| Cash | 4,000 | |
| Accumulated Depreciation—Equipment | 1,000 | |
| Loss on Disposal of Plant Assets | 3,000 | |
| Equipment | | 8,000 |

| A | = | L | + | SE |
|---|---|---|---|---|
| +4,000 | | | | |
| +1,000 | | | | |
| | | | | –3,000 Exp |
| –8,000 | | | | |

Cash Flows +4,000

**Increase in Bonds Payable.** The Bonds Payable account increased $110,000. As indicated in the additional information, the company acquired land from the issuance of these bonds. It reports this noncash transaction in a separate schedule at the bottom of the statement.

**Increase in Common Stock.** The balance sheet reports an increase in Common Stock of $20,000. The additional information section notes that this increase resulted from the issuance

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**HELPFUL HINT**

**When companies issue stocks or bonds for cash, the actual proceeds will appear in the statement of cash flows as a financing inflow (rather than the par value of the stocks or face value of bonds).**

of new shares of stock. This is a cash inflow reported in the financing activities section (see **Helpful Hint**).

**Increase in Retained Earnings.** Retained earnings increased $116,000 during the year. This increase can be explained by two factors: (1) net income of $145,000 increased retained earnings, and (2) dividends of $29,000 decreased retained earnings. The company adjusts net income to net cash provided by operating activities in the operating activities section. Payment of the dividends (not the declaration) is a **cash outflow that the company reports as a financing activity**.

### Statement of Cash Flows—2020

Using the previous information, we can now prepare a statement of cash flows for 2020 for Computer Services Company as shown in **Illustration 17.13** (see **Helpful Hint**).

**ILLUSTRATION 17.13**

**Statement of cash flows, 2020—indirect method**

**Computer Services Company**
**Statement of Cash Flows—Indirect Method**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Net income | | $145,000 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | |
| Depreciation expense | $ 9,000 | |
| Loss on disposal of plant assets | 3,000 | |
| Decrease in accounts receivable | 10,000 | |
| Increase in inventory | (5,000) | |
| Increase in prepaid expenses | (4,000) | |
| Increase in accounts payable | 16,000 | |
| Decrease in income taxes payable | (2,000) | 27,000 |
| Net cash provided by operating activities | | 172,000 |
| Cash flows from investing activities | | |
| Purchase of building | (120,000) | |
| Purchase of equipment | (25,000) | |
| Sale of equipment | 4,000 | |
| Net cash used by investing activities | | (141,000) |
| Cash flows from financing activities | | |
| Issuance of common stock | 20,000 | |
| Payment of cash dividends | (29,000) | |
| Net cash used by financing activities | | (9,000) |
| Net increase in cash | | 22,000 |
| Cash at beginning of period | | 33,000 |
| Cash at end of period | | $ 55,000 |
| **Noncash investing and financing activities** | | |
| Issuance of bonds payable to purchase land | | $110,000 |

**HELPFUL HINT**

**Note that in the investing and financing activities sections, positive numbers indicate cash inflows (receipts), and negative numbers indicate cash outflows (payments).**

## Step 3: Net Change in Cash

### Compare the Net Change in Cash on the Statement of Cash Flows with the Change in the Cash Account Reported on the Balance Sheet to Make Sure the Amounts Agree

Illustration 17.13 indicates that the net change in cash during the period was an increase of $22,000. This agrees with the change in Cash account reported on the balance sheet in Illustration 17.4.

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## Accounting Across the Organization

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### Burning Through Our Cash

**Box** (cloud storage), **Cyan** (game creator), **FireEye** (cyber security), and **MobileIron** (mobile security of data) are a few of the tech companies that recently have issued or are about to issue stock to the public. Investors now have to determine whether these tech companies have viable products and high chances for success.

An important consideration in evaluating a tech company is determining its financial flexibility—its ability to withstand adversity if an economic setback occurs. One way to measure financial flexibility is to assess a company's cash burn rate, which determines how long its cash will hold out if the company is expending more cash than it is receiving.

FireEye, for example, used cash in excess of $50 million in 2013. But the company also had over $150 million as a cash cushion, so it would take over 30 months before it runs out of cash. And even though Box has a much lower cash burn rate than FireEye, it still has over a year's cushion. Compare that to the tech companies in 2000, when over one-quarter of them were on track to run out of cash within a year. And many did. Fortunately, the tech companies of today seem to be better equipped to withstand an economic setback.

**Source:** Shira Ovide, "Tech Firms' Cash Hoards Cool Fears of a Meltdown," *Wall Street Journal* (May 14, 2014).

**What implications does a company's cash burn rate have for its survival? (See WileyPLUS for this answer and additional questions.)**

## DO IT! 2b | Indirect Method

Use the following information to prepare a statement of cash flows using the indirect method.

**Reynolds Company**
**Comparative Balance Sheets**
**December 31**

| Assets | 2020 | 2019 | Change Increase/Decrease |
|---|---|---|---|
| Cash | $ 54,000 | $ 37,000 | $ 17,000 Increase |
| Accounts receivable | 68,000 | 26,000 | 42,000 Increase |
| Inventory | 54,000 | –0– | 54,000 Increase |
| Prepaid expenses | 4,000 | 6,000 | 2,000 Decrease |
| Land | 45,000 | 70,000 | 25,000 Decrease |
| Buildings | 200,000 | 200,000 | –0– |
| Accumulated depreciation—buildings | (21,000) | (11,000) | 10,000 Increase |
| Equipment | 193,000 | 68,000 | 125,000 Increase |
| Accumulated depreciation—equipment | (28,000) | (10,000) | 18,000 Increase |
| Totals | $569,000 | $386,000 | |

| Liabilities and Stockholders' Equity | 2020 | 2019 | Change Increase/Decrease |
|---|---|---|---|
| Accounts payable | $ 23,000 | $ 40,000 | $ 17,000 Decrease |
| Accrued expenses payable | 10,000 | –0– | 10,000 Increase |
| Bonds payable | 110,000 | 150,000 | 40,000 Decrease |
| Common stock ($1 par) | 220,000 | 60,000 | 160,000 Increase |
| Retained earnings | 206,000 | 136,000 | 70,000 Increase |
| Totals | $569,000 | $386,000 | |

**ACTION PLAN**

- **Determine net cash provided/used by operating activities by adjusting net income for items that did not affect cash.**
- **Determine net cash provided/used by investing activities and financing activities.**
- **Determine the net increase/decrease in cash.**

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**Reynolds Company**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Sales revenue | | $890,000 |
| Cost of goods sold | $465,000 | |
| Operating expenses | 221,000 | |
| Interest expense | 12,000 | |
| Loss on disposal of plant assets | 2,000 | 700,000 |
| Income before income taxes | | 190,000 |
| Income tax expense | | 65,000 |
| Net income | | $125,000 |

**Additional information:**

1. Operating expenses include depreciation expense of $33,000.
2. Land was sold at its book value for cash.
3. Cash dividends of $55,000 were declared and paid in 2020.
4. Equipment with a cost of $166,000 was purchased for cash. Equipment with a cost of $41,000 and a book value of $36,000 was sold for $34,000 cash.
5. Bonds of $40,000 were redeemed at their face value for cash.
6. Common stock ($1 par) of $160,000 was issued for cash.

**Solution**

**Reynolds Company**
**Statement of Cash Flows—Indirect Method**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Net income | | $ 125,000 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | |
| Depreciation expense | $ 33,000 | |
| Loss on disposal of plant assets | 2,000 | |
| Increase in accounts receivable | (42,000) | |
| Increase in inventory | (54,000) | |
| Decrease in prepaid expenses | 2,000 | |
| Decrease in accounts payable | (17,000) | |
| Increase in accrued expenses payable | 10,000 | (66,000) |
| Net cash provided by operating activities | | 59,000 |
| Cash flows from investing activities | | |
| Sale of land | 25,000 | |
| Sale of equipment | 34,000 | |
| Purchase of equipment | (166,000) | |
| Net cash used by investing activities | | (107,000) |
| Cash flows from financing activities | | |
| Redemption of bonds | (40,000) | |
| Sale of common stock | 160,000 | |
| Payment of dividends | (55,000) | |
| Net cash provided by financing activities | | 65,000 |
| Net increase in cash | | 17,000 |
| Cash at beginning of period | | 37,000 |
| Cash at end of period | | $ 54,000 |

Related exercise material: **BE17.4, BE17.5, BE17.6, BE17.7, DO IT! 17.2b, E17.4, E17.5, E17.6, E17.7, and E17.9.**

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# Analyzing the Statement of Cash Flows

**LEARNING OBJECTIVE 3**

Analyze the statement of cash flows.

Traditionally, investors and creditors used ratios based on accrual accounting. These days, cash-based ratios are gaining increased acceptance among analysts.

## Free Cash Flow

In the statement of cash flows, net cash provided by operating activities is intended to indicate the cash-generating capability of a company. Analysts have noted, however, that **net cash provided by operating activities fails to take into account that a company must invest in new fixed assets** just to maintain its current level of operations. Companies also must at least **maintain dividends at current levels** to satisfy investors. The measurement of free cash flow provides additional insight regarding a company's cash-generating ability. **Free cash flow** describes the net cash provided by operating activities after adjustment for capital expenditures and dividends.

Consider the following example. Suppose that MPC produced and sold 10,000 personal computers this year. It reported $100,000 net cash provided by operating activities. In order to maintain production at 10,000 computers, MPC invested $15,000 in equipment. It chose to pay $5,000 in dividends. Its free cash flow was $80,000 ($100,000 – $15,000 – $5,000). The company could use this $80,000 either to purchase new assets to expand the business or to pay an $80,000 dividend and continue to produce 10,000 computers. In practice, free cash flow is often calculated with the formula in **Illustration 17.14**. (Alternative definitions also exist.)

| Free Cash Flow | = | Net Cash Provided by Operating Activities | – | Capital Expenditures | – | Cash Dividends |
|---|---|---|---|---|---|---|

**ILLUSTRATION 17.14**
**Free cash flow**

**Illustration 17.15** provides basic information (in millions) excerpted from the 2015 statement of cash flows of **Microsoft Corporation**.

Real World

**Microsoft Corporation**
**Statement of Cash Flows (partial)**
**2015**

| | | |
|---|---|---|
| Cash provided by operating activities | | $29,080 |
| Cash flows from investing activities | | |
| Additions to property and equipment | $ (5,944) | |
| Purchases of investments | (98,729) | |
| Sales of investments | 70,848 | |
| Acquisitions of companies | (3,723) | |
| Maturities of investments | 15,013 | |
| Other | (466) | |
| Cash used by investing activities | | (23,001) |
| Cash paid for dividends | | (9,882) |

**ILLUSTRATION 17.15**
**Microsoft's cash flow information ($ in millions)**

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Microsoft's free cash flow is calculated as shown in Illustration 17.16.

**ILLUSTRATION 17.16**
**Calculation of Microsoft's free cash flow ($ in millions)**

| | |
|---|---|
| Cash provided by operating activities | $29,080 |
| Less: Expenditures on property, plant, and equipment | 5,944 |
| Dividends paid | 9,882 |
| **Free cash flow** | **$13,254** |

Microsoft generated approximately $17.25 billion of free cash flow. This is a tremendous amount of cash generated in a single year. It is available for the acquisition of new assets, the retirement of stock or debt, or the payment of dividends. Also note that Microsoft's cash from operations of $29.1 billion is greater than its 2015 net income of $12.2 billion. This lends additional credibility to Microsoft's income number as an indicator of potential future performance.

## DO IT! 3 | Free Cash Flow

Chicago Corporation issued the following statement of cash flows for 2020.

**Chicago Corporation**
**Statement of Cash Flows—Indirect Method**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Net income | | $ 19,000 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | |
| Depreciation expense | $ 8,100 | |
| Loss on disposal of plant assets | 1,300 | |
| Decrease in accounts receivable | 6,900 | |
| Increase in inventory | (4,000) | |
| Decrease in accounts payable | (2,000) | 10,300 |
| Net cash provided by operating activities | | 29,300 |
| Cash flows from investing activities | | |
| Sale of investments | 1,100 | |
| Purchase of equipment | (19,000) | |
| Net cash used by investing activities | | (17,900) |
| Cash flows from financing activities | | |
| Issuance of stock | 10,000 | |
| Payment on long-term note payable | (5,000) | |
| Payment for dividends | (9,000) | |
| Net cash used by financing activities | | (4,000) |
| Net increase in cash | | 7,400 |
| Cash at beginning of year | | 10,000 |
| Cash at end of year | | $ 17,400 |

(a) Compute free cash flow for Chicago Corporation. (b) Explain why free cash flow often provides better information than "Net cash provided by operating activities."

**ACTION PLAN**

- Compute free cash flow as Net cash provided by operating activities – Capital expenditures – Cash dividends.

### Solution

**a.** Free cash flow = $29,300 – $19,000 – $9,000 = $1,300

**b.** Net cash provided by operating activities fails to take into account that a company must invest in new plant assets just to maintain the current level of operations. Companies must also maintain dividends at current levels to satisfy investors. The measurement of free cash flow provides additional insight regarding a company's cash-generating ability.

Related exercise material: **BE17.8, BE17.9, BE17.10, BE17.11, DO IT! 17.3, E17.8, and E17.10.**

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# Appendix 17A Statement of Cash Flows—Direct Method

**LEARNING OBJECTIVE *4**

Prepare a statement of cash flows using the direct method.

To explain and illustrate the direct method for preparing a statement of cash flows, we use the transactions of Computer Services Company for 2020. Illustration 17A.1 presents information related to 2020 for the company.

To prepare a statement of cash flows under the direct approach, we apply the three steps outlined in Illustration 17.3.

## Step 1: Operating Activities

### Determine Net Cash Provided/Used by Operating Activities by Converting Net Income Components from an Accrual Basis to a Cash Basis

Under the **direct method**, companies compute net cash provided by operating activities by **adjusting each item in the income statement** from the accrual basis to the cash basis. To

**Computer Services Company**
**Comparative Balance Sheets**
**December 31**

| Assets | 2020 | 2019 | Change in Account Balance Increase/Decrease |
|---|---|---|---|
| Current assets | | | |
| Cash | $ 55,000 | $ 33,000 | $ 22,000 Increase |
| Accounts receivable | 20,000 | 30,000 | 10,000 Decrease |
| Inventory | 15,000 | 10,000 | 5,000 Increase |
| Prepaid expenses | 5,000 | 1,000 | 4,000 Increase |
| Property, plant, and equipment | | | |
| Land | 130,000 | 20,000 | 110,000 Increase |
| Buildings | 160,000 | 40,000 | 120,000 Increase |
| Accumulated depreciation—buildings | (11,000) | (5,000) | 6,000 Increase |
| Equipment | 27,000 | 10,000 | 17,000 Increase |
| Accumulated depreciation—equipment | (3,000) | (1,000) | 2,000 Increase |
| Total assets | $398,000 | $138,000 | |
| **Liabilities and Stockholders' Equity** | | | |
| Current liabilities | | | |
| Accounts payable | $ 28,000 | $ 12,000 | $ 16,000 Increase |
| Income taxes payable | 6,000 | 8,000 | 2,000 Decrease |
| Long-term liabilities | | | |
| Bonds payable | 130,000 | 20,000 | 110,000 Increase |
| Stockholders' equity | | | |
| Common stock | 70,000 | 50,000 | 20,000 Increase |
| Retained earnings | 164,000 | 48,000 | 116,000 Increase |
| Total liabilities and stockholders' equity | $398,000 | $138,000 | |

**ILLUSTRATION 17A.1**
**Comparative balance sheets, income statement, and additional information for Computer Services Company**

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**ILLUSTRATION 17A.1**
(*continued*)

**Computer Services Company**
**Income Statement**
**For the Year Ended December 31, 2020**

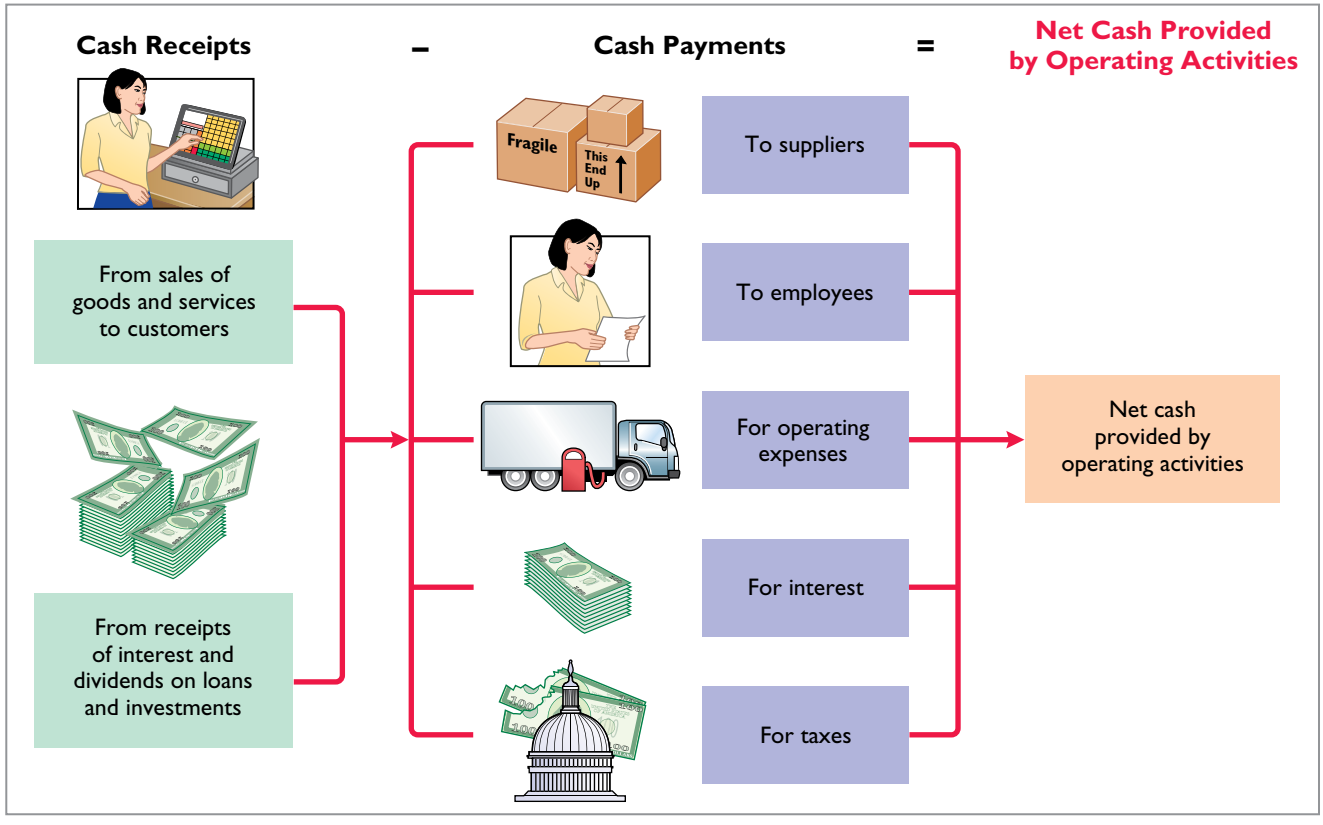
| | | |
|---|---|---|
| Sales revenue | | $507,000 |
| Cost of goods sold | $150,000 | |
| Operating expenses (excluding depreciation) | 111,000 | |
| Depreciation expense | 9,000 | |
| Loss on disposal of plant assets | 3,000 | |
| Interest expense | 42,000 | 315,000 |
| Income before income tax | | 192,000 |
| Income tax expense | | 47,000 |
| Net income | | $145,000 |

**Additional information for 2020:**

1. Depreciation expense was comprised of $6,000 for building and $3,000 for equipment.
2. The company sold equipment with a book value of $7,000 (cost $8,000, less accumulated depreciation $1,000) for $4,000 cash.
3. Issued $110,000 of long-term bonds in direct exchange for land.
4. A building costing $120,000 was purchased for cash. Equipment costing $25,000 was also purchased for cash.
5. Issued common stock for $20,000 cash.
6. The company declared and paid a $29,000 cash dividend.

simplify and condense the operating activities section, companies **report only major classes of operating cash receipts and cash payments**. For these major classes, the difference between cash receipts and cash payments is the net cash provided by operating activities. These relationships are as shown in Illustration 17A.2.

**ILLUSTRATION 17A.2** **Major classes of cash receipts and payments**



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**An efficient way to apply the direct method is to analyze the items reported in the income statement in the order in which they are listed.** We then determine cash receipts and cash payments related to these revenues and expenses. The following presents the adjustments required to prepare a statement of cash flows for Computer Services Company using the direct approach.

**Cash Receipts from Customers.** The income statement for Computer Services reported sales revenue from customers of $507,000. How much of that was cash receipts? To answer that, a company considers the change in accounts receivable during the year. When accounts receivable increase during the year, revenues on an accrual basis are higher than cash receipts from customers. Operations led to revenues, but not all of those revenues resulted in cash receipts.

To determine the amount of cash receipts, a company deducts from sales revenue the increase in accounts receivable. On the other hand, there may be a decrease in accounts receivable. That would occur if cash receipts from customers exceeded sales revenue. In that case, a company adds to sales revenue the decrease in accounts receivable. For Computer Services, accounts receivable decreased $10,000. Thus, cash receipts from customers were $517,000, computed as shown in **Illustration 17A.3**.

| | |
|---|---|
| Sales revenue | $507,000 |
| Add: Decrease in accounts receivable | 10,000 |
| **Cash receipts from customers** | **$517,000** |

**ILLUSTRATION 17A.3**
**Computation of cash receipts from customers**

Computer Services can also determine cash receipts from customers from an analysis of the Accounts Receivable account, as shown in **Illustration 17A.4.**

**Accounts Receivable**

| | | | | |
|---|---|---|---|---|
| 1/1/20 | Balance | 30,000 | **Receipts from customers** | **517,000** |
| | Sales revenue | 507,000 | | |
| 12/31/20 | Balance | 20,000 | | |

**ILLUSTRATION 17A.4**
**Analysis of accounts receivable**

**HELPFUL HINT**
The T-account shows that sales revenue plus decrease in accounts receivable equals cash receipts.

**Illustration 17A.5** shows the relationships among cash receipts from customers, sales revenue, and changes in accounts receivable (see **Helpful Hint**).

**Cash Receipts from Customers** = **Sales Revenue** { + **Decrease in Accounts Receivable** or − **Increase in Accounts Receivable**

**ILLUSTRATION 17A.5**
**Formula to compute cash receipts from customers—direct method**

**Cash Payments to Suppliers.** Computer Services reported cost of goods sold of $150,000 on its income statement. How much of that was cash payments to suppliers? To answer that, it is first necessary to find purchases for the year. To find purchases, a company adjusts cost of goods sold for the change in inventory. When inventory increases during the year, purchases for the year have exceeded cost of goods sold. As a result, to determine the amount of purchases, a company adds to cost of goods sold the increase in inventory.

In 2020, Computer Services' inventory increased $5,000. It computes purchases as shown in **Illustration 17A.6**.

| | |
|---|---|
| Cost of goods sold | $150,000 |
| Add: Increase in inventory | 5,000 |
| **Purchases** | **$155,000** |

**ILLUSTRATION 17A.6**
**Computation of purchases**

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Computer Services can also determine purchases from an analysis of the Inventory account, as shown in **Illustration 17A.7**.

**ILLUSTRATION 17A.7**
**Analysis of inventory**

| Inventory | | | | |
|---|---|---|---|---|
| 1/1/20 | Balance | 10,000 | Cost of goods sold | 150,000 |
| | **Purchases** | **155,000** | | |
| 12/31/20 | Balance | 15,000 | | |

After computing purchases, a company can determine cash payments to suppliers. This is done by adjusting purchases for the change in accounts payable. When accounts payable increase during the year, purchases on an accrual basis are higher than they are on a cash basis. As a result, to determine cash payments to suppliers, a company deducts from purchases the increase in accounts payable. On the other hand, if cash payments to suppliers exceed purchases, there will be a decrease in accounts payable. In that case, a company adds to purchases the decrease in accounts payable. For Computer Services, cash payments to suppliers were $139,000, computed as shown in **Illustration 17A.8**.

**ILLUSTRATION 17A.8**
**Computation of cash payments to suppliers**

| | |
|---|---|
| Purchases | $155,000 |
| Deduct: Increase in accounts payable | 16,000 |
| **Cash payments to suppliers** | **$139,000** |

Computer Services also can determine cash payments to suppliers from an analysis of the Accounts Payable account, as shown in **Illustration 17A.9**.

**ILLUSTRATION 17A.9**
**Analysis of accounts payable**

| Accounts Payable | | | | |
|---|---|---|---|---|
| **Payments to suppliers** | **139,000** | 1/1/20 | Balance | 12,000 |
| | | | Purchases | 155,000 |
| | | 12/31/20 | Balance | 28,000 |

**HELPFUL HINT**
The T-account shows that purchases less increase in accounts payable equals payments to suppliers.

**Illustration 17A.10** shows the relationships among cash payments to suppliers, cost of goods sold, changes in inventory, and changes in accounts payable (see **Helpful Hint**).

**ILLUSTRATION 17A.10**
**Formula to compute cash payments to suppliers—direct method**

**Cash Payments to Suppliers** = **Cost of Goods Sold** { + **Increase in Inventory** or − **Decrease in Inventory** } { + **Decrease in Accounts Payable** or − **Increase in Accounts Payable** }

**Cash Payments for Operating Expenses.** Computer Services reported on its income statement operating expenses of $111,000. How much of that amount was cash paid for operating expenses? To answer that, we need to adjust this amount for any changes in prepaid expenses and accrued expenses payable. For example, if prepaid expenses increased during the year, cash paid for operating expenses is higher than operating expenses reported on the income statement. To convert operating expenses to cash payments for operating expenses, a company adds the increase in prepaid expenses to operating expenses. On the other hand, if prepaid expenses decrease during the year, it deducts the decrease from operating expenses.

Companies must also adjust operating expenses for changes in accrued expenses payable. When accrued expenses payable increase during the year, operating expenses on an accrual basis are higher than they are in a cash basis. As a result, to determine cash payments

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for operating expenses, a company deducts from operating expenses an increase in accrued expenses payable. On the other hand, a company adds to operating expenses a decrease in accrued expenses payable because cash payments exceed operating expenses.

Computer Services' cash payments for operating expenses were $115,000, computed as shown in **Illustration 17A.11**.

| | |
|---|---|
| Operating expenses | $111,000 |
| Add: Increase in prepaid expenses | 4,000 |
| **Cash payments for operating expenses** | **$115,000** |

**ILLUSTRATION 17A.11**
**Computation of cash payments for operating expenses**

**Illustration 17A.12** shows the relationships among cash payments for operating expenses, changes in prepaid expenses, and changes in accrued expenses payable.

**Cash Payments for Operating Expenses** = **Operating Expenses** { + **Increase in Prepaid Expenses** or − **Decrease in Prepaid Expenses** } { + **Decrease in Accrued Expenses Payable** or − **Increase in Accrued Expenses Payable** }

**ILLUSTRATION 17A.12**
**Formula to compute cash payments for operating expenses—direct method**

**Depreciation Expense and Loss on Disposal of Plant Assets.** Computer Services' depreciation expense in 2020 was $9,000. Depreciation expense is not shown on a statement of cash flows under the direct method because it is a noncash charge. If the amount for operating expenses includes depreciation expense, operating expenses must be reduced by the amount of depreciation to determine cash payments for operating expenses.

The loss on disposal of plant assets of $3,000 is also a noncash charge. The loss on disposal of plant assets reduces net income, but it does not reduce cash. Thus, the loss on disposal of plant assets is not shown on the statement of cash flows under the direct method.

Other charges to expense that do not require the use of cash, such as the amortization of intangible assets and bad debt expense, are treated in the same manner as depreciation.

**Cash Payments for Interest.** Computer Services reported on the income statement interest expense of $42,000. Since the balance sheet did not include an accrual for interest payable for 2019 or 2020, the amount reported as expense is the same as the amount of interest paid.

**Cash Payments for Income Taxes.** Computer Services reported income tax expense of $47,000 on the income statement. Income taxes payable, however, decreased $2,000. This decrease means that income taxes paid were more than income taxes reported in the income statement. Cash payments for income taxes were therefore $49,000 as shown in **Illustration 17A.13**.

| | |
|---|---|
| Income tax expense | $47,000 |
| Add: Decrease in income taxes payable | 2,000 |
| **Cash payments for income taxes** | **$49,000** |

**ILLUSTRATION 17A.13**
**Computation of cash payments for income taxes**

Computer Services can also determine cash payments for income taxes from an analysis of the Income Taxes Payable account, as shown in **Illustration 17A.14**.

**Income Taxes Payable**

| | | | | |
|---|---|---|---|---|
| **Cash payments for income taxes** | **49,000** | 1/1/20 | Balance | 8,000 |
| | | | Income tax expense | 47,000 |
| | | 12/31/20 | Balance | 6,000 |

**ILLUSTRATION 17A.14**
**Analysis of income taxes payable**

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Illustration 17A.15 shows the relationships among cash payments for income taxes, income tax expense, and changes in income taxes payable.

**ILLUSTRATION 17A.15**
**Formula to compute cash payments for income taxes—direct method**

| Cash Payments for Income Taxes | = | Income Tax Expense | + | Decrease in Income Taxes Payable |
|---|---|---|---|---|
| | | | or | |
| | | | − | Increase in Income Taxes Payable |

The operating activities section of the statement of cash flows of Computer Services is shown in Illustration 17A.16.

**ILLUSTRATION 17A.16**
**Operating activities section of the statement of cash flows**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Cash receipts from customers | | $517,000 |
| Less: Cash payments: | | |
| To suppliers | $139,000 | |
| For operating expenses | 115,000 | |
| For interest expense | 42,000 | |
| For income taxes | 49,000 | 345,000 |
| Net cash provided by operating activities | | $172,000 |

When a company uses the direct method, it must also provide in a **separate schedule** (not shown here) the net cash flows from operating activities as computed under the indirect method. Note that whether a company uses the indirect or direct method, the net cash provided by operating activities is the same for both methods.

# Step 2: Investing and Financing Activities

## Analyze Changes in Noncurrent Asset and Liability Accounts and Stockholders' Equity Accounts and Record as Investing and Financing Activities, or Disclose as Noncash Transactions

**Increase in Land.** As indicated from the change in the Land account and the additional information, Computer Services purchased land of $110,000 by directly exchanging bonds for land. The exchange of bonds payable for land has no effect on cash. But, it is a significant noncash investing and financing activity that merits disclosure in a separate schedule (see Illustration 17A.18).

**Increase in Buildings.** As the additional data indicate, Computer Services acquired an office building for $120,000 cash. This is a cash outflow reported in the investing activities section (see Illustration 17A.18).

**HELPFUL HINT**
**The investing and financing activities are measured and reported the same under both the direct and indirect methods.**

**Increase in Equipment.** The Equipment account increased $17,000. The additional information explains that this was a net increase that resulted from two transactions: (1) a purchase of equipment of $25,000, and (2) the sale for $4,000 of equipment costing $8,000. These transactions are investing activities (see Helpful Hint). The company should report each transaction separately. The statement in Illustration 17A.18 reports the purchase of equipment as an outflow of cash for $25,000. It reports the sale as an inflow of cash for $4,000. The T-account in Illustration 17A.17 shows the reasons for the change in this account during the year.

**ILLUSTRATION 17A.17**
**Analysis of equipment**

**Equipment**

| | | | | |
|---|---|---|---|---|
| 1/1/20 | Balance | 10,000 | Cost of equipment sold | 8,000 |
| | Purchase of equipment | 25,000 | | |
| 12/31/20 | Balance | 27,000 | | |

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The following entry shows the details of the equipment sale transaction.

| | | |
|---|---|---|
| Cash | 4,000 | |
| Accumulated Depreciation—Equipment | 1,000 | |
| Loss on Disposal of Plant Assets | 3,000 | |
| Equipment | | 8,000 |

| A | = | L | + | SE |
|---|---|---|---|---|
| +4,000 | | | | |
| +1,000 | | | | |
| | | | | −3,000 Exp |
| −8,000 | | | | |

Cash Flows
+4,000

**Increase in Bonds Payable.** The Bonds Payable account increased $110,000. As indicated in the additional information, the company acquired land by directly exchanging bonds for land. Illustration 17A.18 reports this noncash transaction in a separate schedule at the bottom of the statement.

**Increase in Common Stock.** The balance sheet reports an increase in Common Stock of $20,000. The additional information section notes that this increase resulted from the issuance of new shares of stock. This is a cash inflow reported in the financing activities section in Illustration 17A.18 (see **Helpful Hint**).

**HELPFUL HINT**

When companies issue stocks or bonds for cash, the actual proceeds will appear in the statement of cash flows as a financing inflow (rather than the par value of the stocks or face value of bonds).

**Increase in Retained Earnings.** Retained earnings increased $116,000 during the year. This increase can be explained by two factors: (1) net income of $145,000 increased retained earnings, and (2) dividends of $29,000 decreased retained earnings. **Payment** of the dividends (not the declaration) is a **cash outflow that the company reports as a financing activity in Illustration 17A.18**.

## Statement of Cash Flows—2020

**Illustration 17A.18** shows the statement of cash flows for Computer Services Company.

**Computer Services Company**
**Statement of Cash Flows—Direct Method**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Cash receipts from customers | | $ 517,000 |
| Less: Cash payments: | | |
| To suppliers | $ 139,000 | |
| For operating expenses | 115,000 | |
| For income taxes | 49,000 | |
| For interest expense | 42,000 | 345,000 |
| Net cash provided by operating activities | | 172,000 |
| Cash flows from investing activities | | |
| Sale of equipment | 4,000 | |
| Purchase of building | (120,000) | |
| Purchase of equipment | (25,000) | |
| Net cash used by investing activities | | (141,000) |
| Cash flows from financing activities | | |
| Issuance of common stock | 20,000 | |
| Payment of cash dividends | (29,000) | |
| Net cash used by financing activities | | (9,000) |
| Net increase in cash | | 22,000 |
| Cash at beginning of period | | 33,000 |
| Cash at end of period | | $ 55,000 |
| **Noncash investing and financing activities** | | |
| Issuance of bonds payable to purchase land | | $ 110,000 |

**ILLUSTRATION 17A.18**
**Statement of cash flows, 2020—direct method**

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## Step 3: Net Change in Cash

### Compare the Net Change in Cash on the Statement of Cash Flows with the Change in the Cash Account Reported on the Balance Sheet to Make Sure the Amounts Agree

Illustration 17A.18 indicates that the net change in cash during the period was an increase of $22,000. This agrees with the change in balances in the Cash account reported on the balance sheets in Illustration 17A.1.

---

# Appendix 17B Worksheet for the Indirect Method

**LEARNING OBJECTIVE *5**

Use a worksheet to prepare the statement of cash flows using the indirect method.

When preparing a statement of cash flows, companies may need to make numerous adjustments of net income. In such cases, they often use **a worksheet to assemble and classify the data that will appear on the statement**. The worksheet is merely an aid in preparing the statement. Its use is optional. Illustration 17B.1 shows the skeleton format of the worksheet for preparation of the statement of cash flows.

The following guidelines are important in preparing a worksheet.

1. In the balance sheet accounts section, **list accounts with debit balances separately from those with credit balances**. This means, for example, that Accumulated Depreciation appears under credit balances and not as a contra account under debit balances. Enter the beginning and ending balances of each account in the appropriate columns. Enter as reconciling items in the two middle columns the transactions that caused the change in the account balance during the year.

**ILLUSTRATION 17B.1**
**Format of worksheet**

XYZ Company

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

**XYZ Company**
**Worksheet**
**Statement of Cash Flows For the Year Ended . . .**

| Balance Sheet Accounts | End of Last Year Balances | Reconciling Items Debit | Reconciling Items Credit | End of Current Year Balances |
|---|---|---|---|---|
| Debit balance accounts | XX | XX | XX | XX |
| | XX | XX | XX | XX |
| Totals | XXX | | | XXX |
| Credit balance accounts | XX | XX | XX | XX |
| | XX | XX | XX | XX |
| Totals | XXX | | | XXX |
| | | | | |
| Statement of Cash Flows Effects | | | | |
| Operating activities | | | | |
| Net income | | XX | | |
| Adjustments to net income | | XX | XX | |
| Investing activities | | | | |
| Receipts and payments | | XX | XX | |
| Financing activities | | | | |
| Receipts and payments | | XX | XX | |
| Totals | | XXX | XXX | |
| Increase (decrease) in cash | | (XX) | XX | |
| Totals | | XXX | XXX | |

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After all reconciling items have been entered, each line pertaining to a balance sheet account should "foot across." That is, the beginning balance plus or minus the reconciling item(s) must equal the ending balance. When this agreement exists for all balance sheet accounts, all changes in account balances have been reconciled.

2. The bottom portion of the worksheet consists of the operating, investing, and financing activities sections. It provides the information necessary to prepare the formal statement of cash flows. **Enter inflows of cash as debits in the reconciling columns. Enter outflows of cash as credits in the reconciling columns.** Thus, in this section, the sale of equipment for cash at book value appears as a debit under investing activities. Similarly, the purchase of land for cash appears as a credit under investing activities.
3. **The reconciling items shown in the worksheet are not entered in any journal or posted to any account.** They do not represent either adjustments or corrections of the balance sheet accounts. They are used only to facilitate the preparation of the statement of cash flows.

## Preparing the Worksheet

Preparing a worksheet involves a series of prescribed steps. The steps in this case are:

1. Enter in the balance sheet accounts section the balance sheet accounts and their beginning and ending balances.
2. Enter in the reconciling columns of the worksheet the data that explain the changes in the balance sheet accounts other than cash and their effects on the statement of cash flows.
3. Enter on the cash line and at the bottom of the worksheet the increase or decrease in cash. This entry should enable the totals of the reconciling columns to be in agreement.

To illustrate the preparation of a worksheet, we will use the 2020 data for Computer Services Company. Your familiarity with these data (from the chapter) should help you understand the use of a worksheet. For ease of reference, the comparative balance sheets, income statement, and selected data for 2020 are presented in **Illustration 17B.2**.

Computer Services Company

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| | A | B | C | D |
|---|---|---|---|---|
| 1 | **Computer Services Company** | | | |
| 2 | **Comparative Balance Sheets** | | | |
| 3 | **December 31** | | | |
| 4 | | | | |
| 5 | | | | Change in Account Balance |
| 6 | Assets | 2020 | 2019 | Increase/Decrease |
| 7 | Current assets | | | |
| 8 | Cash | $ 55,000 | $ 33,000 | $ 22,000 Increase |
| 9 | Accounts receivable | 20,000 | 30,000 | 10,000 Decrease |
| 10 | Inventory | 15,000 | 10,000 | 5,000 Increase |
| 11 | Prepaid expenses | 5,000 | 1,000 | 4,000 Increase |
| 12 | Property, plant, and equipment | | | |
| 13 | Land | 130,000 | 20,000 | 110,000 Increase |
| 14 | Buildings | 160,000 | 40,000 | 120,000 Increase |
| 15 | Accumulated depreciation—buildings | (11,000) | (5,000) | 6,000 Increase |
| 16 | Equipment | 27,000 | 10,000 | 17,000 Increase |
| 17 | Accumulated depreciation—equipment | (3,000) | (1,000) | 2,000 Increase |
| 18 | Total assets | $398,000 | $138,000 | |
| 19 | | | | |
| 20 | Liabilities and Stockholders' Equity | | | |
| 21 | Current liabilities | | | |
| 22 | Accounts payable | $ 28,000 | $ 12,000 | $ 16,000 Increase |
| 23 | Income taxes payable | 6,000 | 8,000 | 2,000 Decrease |
| 24 | Long-term liabilities | | | |
| 25 | Bonds payable | 130,000 | 20,000 | 110,000 Increase |
| 26 | Stockholders' equity | | | |
| 27 | Common stock | 70,000 | 50,000 | 20,000 Increase |
| 28 | Retained earnings | 164,000 | 48,000 | 116,000 Increase |
| 29 | Total liabilities and stockholders' equity | $398,000 | $138,000 | |

**ILLUSTRATION 17B.2**
**Comparative balance sheets, income statement, and additional information for Computer Services Company**

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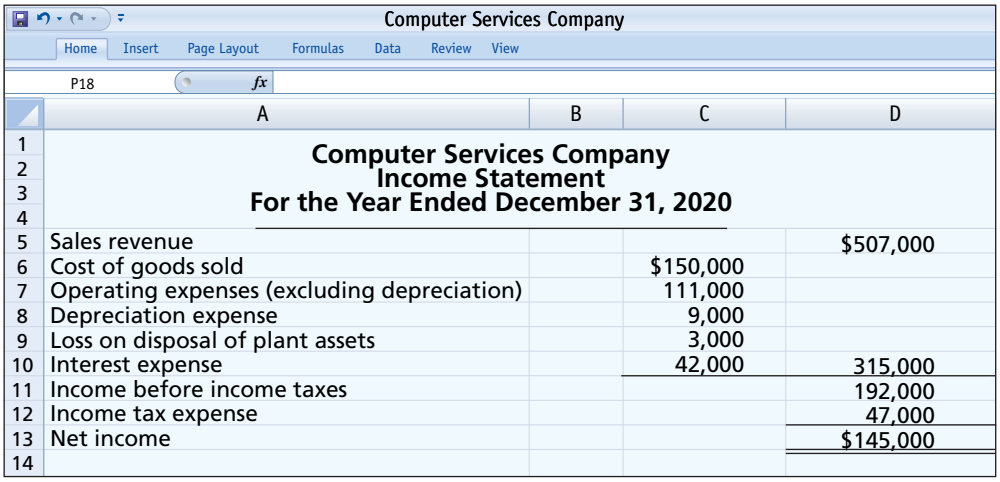
**ILLUSTRATION 17B.2**
(*continued*)




| | A | B | C | D |
|---|---|---|---|---|
| 1 | **Computer Services Company** | | | |
| 2 | **Income Statement** | | | |
| 3 | **For the Year Ended December 31, 2020** | | | |
| 4 | | | | |
| 5 | Sales revenue | | | $507,000 |
| 6 | Cost of goods sold | | $150,000 | |
| 7 | Operating expenses (excluding depreciation) | | 111,000 | |
| 8 | Depreciation expense | | 9,000 | |
| 9 | Loss on disposal of plant assets | | 3,000 | |
| 10 | Interest expense | | 42,000 | 315,000 |
| 11 | Income before income taxes | | | 192,000 |
| 12 | Income tax expense | | | 47,000 |
| 13 | Net income | | | $145,000 |
| 14 | | | | |

**Additional information for 2020:**

1. Depreciation expense was comprised of $6,000 for building and $3,000 for equipment.
2. The company sold equipment with a book value of $7,000 (cost $8,000, less accumulated depreciation $1,000) for $4,000 cash.
3. Issued $110,000 of long-term bonds in direct exchange for land.
4. A building costing $120,000 was purchased for cash. Equipment costing $25,000 was also purchased for cash.
5. Issued common stock for $20,000 cash.
6. The company declared and paid a $29,000 cash dividend.

## Determining the Reconciling Items

Companies can use one of several approaches to determine the reconciling items. For example, they can first complete the changes affecting net cash provided by operating activities, and then can determine the effects of financing and investing transactions. Or, they can analyze the balance sheet accounts in the order in which they are listed on the worksheet. We will follow this latter approach for Computer Services, except for cash. As indicated in Step 3, **cash is handled last**.

**Accounts Receivable.** The decrease of $10,000 in accounts receivable means that cash collections from sales revenue are higher than the sales revenue reported in the income statement. To convert net income to net cash provided by operating activities, we add the decrease of $10,000 to net income. The entry in the reconciling columns of the worksheet is:

| | | | |
|---|---|---|---|
| **a.** | Operating—Decrease in Accounts Receivable | 10,000 | |
| | Accounts Receivable | | 10,000 |

**Inventory.** Computer Services' inventory balance increases $5,000 during the period. The Inventory account reflects the difference between the amount of inventory that the company purchased and the amount that it sold. For Computer Services, this means that the cost of merchandise purchased exceeds the cost of goods sold by $5,000. As a result, cost of goods sold does not reflect $5,000 of cash payments made for merchandise. We deduct this inventory increase of $5,000 during the period from net income to arrive at net cash provided by operating activities. The worksheet entry is:

| | | | |
|---|---|---|---|
| **b.** | Inventory | 5,000 | |
| | Operating—Increase in Inventory | | 5,000 |

**Prepaid Expenses.** An increase of $4,000 in prepaid expenses means that expenses deducted in determining net income are less than expenses that were paid in cash. We deduct the increase of $4,000 from net income in determining net cash provided by operating activities. The worksheet entry is:

| | | | |
|---|---|---|---|
| **c.** | Prepaid Expenses | 4,000 | |
| | Operating—Increase in Prepaid Expenses | | 4,000 |

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**Land.** The increase in land of $110,000 resulted from a purchase through the issuance of long-term bonds. The company should report this transaction as a significant noncash investing and financing activity (see **Helpful Hint**). The worksheet entry is:

| | | | |
|---|---|---|---|
| **d.** | Land | 110,000 | |
| | Bonds Payable | | 110,000 |

**Buildings.** The cash purchase of a building for $120,000 is an investing activity cash outflow. The entry in the reconciling columns of the worksheet is:

| | | | |
|---|---|---|---|
| **e.** | Buildings | 120,000 | |
| | Investing—Purchase of Building | | 120,000 |

**Equipment.** The increase in equipment of $17,000 resulted from a cash purchase of $25,000 and the disposal of plant assets (equipment) costing $8,000. The book value of the equipment was $7,000, the cash proceeds were $4,000, and a loss of $3,000 was recorded. The worksheet entries are:

| | | | |
|---|---|---|---|
| **f.** | Equipment | 25,000 | |
| | Investing—Purchase of Equipment | | 25,000 |
| **g.** | Investing—Sale of Equipment | 4,000 | |
| | Operating—Loss on Disposal of Plant Assets | 3,000 | |
| | Accumulated Depreciation—Equipment | 1,000 | |
| | Equipment | | 8,000 |

**Accounts Payable.** We must add the increase of $16,000 in accounts payable to net income to determine net cash provided by operating activities. The worksheet entry is:

| | | | |
|---|---|---|---|
| **h.** | Operating—Increase in Accounts Payable | 16,000 | |
| | Accounts Payable | | 16,000 |

**Income Taxes Payable.** When a company incurs income tax expense but has not yet paid its taxes, it records income taxes payable. A change in the Income Taxes Payable account reflects the difference between income tax expense incurred and income tax actually paid. Computer Services' Income Taxes Payable account decreases by $2,000. That means the $47,000 of income tax expense reported on the income statement was $2,000 less than the amount of taxes paid during the period of $49,000. To adjust net income to a cash basis, we must reduce net income by $2,000. The worksheet entry is:

| | | | |
|---|---|---|---|
| **i.** | Income Taxes Payable | 2,000 | |
| | Operating—Decrease in Income Taxes Payable | | 2,000 |

**Bonds Payable.** The increase of $110,000 in this account resulted from the issuance of bonds for land. This is a significant noncash investing and financing activity. Worksheet entry (d) above is the only entry necessary.

**Common Stock.** The balance sheet reports an increase in Common Stock of $20,000. The additional information section notes that this increase resulted from the issuance of new shares of stock. This is a cash inflow reported in the financing section. The worksheet entry is:

| | | | |
|---|---|---|---|
| **j.** | Financing—Issuance of Common Stock | 20,000 | |
| | Common Stock | | 20,000 |

**Accumulated Depreciation—Buildings, and Accumulated Depreciation—Equipment.** Increases in these accounts of $6,000 and $3,000, respectively, resulted from depreciation expense. Depreciation expense is a **noncash charge that we must add to net income** to determine net cash provided by operating activities. The worksheet entries are:

| | | | |
|---|---|---|---|
| **k.** | Operating—Depreciation Expense | 6,000 | |
| | Accumulated Depreciation—Buildings | | 6,000 |
| **l.** | Operating—Depreciation Expense | 3,000 | |
| | Accumulated Depreciation—Equipment | | 3,000 |

**Retained Earnings.** The $116,000 increase in retained earnings resulted from net income of $145,000 and the declaration and payment of a $29,000 cash dividend. Net income is

**HELPFUL HINT**

**These amounts are asterisked in the worksheet to indicate that they result from a significant noncash transaction.**

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included in net cash provided by operating activities, and the dividends are a financing activity cash outflow. The entries in the reconciling columns of the worksheet are:

| | | | |
|---|---|---|---|
| **m.** Operating—Net Income | | 145,000 | |
| Retained Earnings | | | 145,000 |
| **n.** Retained Earnings | | 29,000 | |
| Financing—Payment of Dividends | | | 29,000 |

**Disposition of Change in Cash.** The firm's cash increased $22,000 in 2020. The final entry on the worksheet, therefore, is:

| | | | |
|---|---|---|---|
| **o.** Cash | | 22,000 | |
| Increase in Cash | | | 22,000 |

As shown in the worksheet, we enter the increase in cash in the reconciling credit column as a **balancing** amount. This entry should complete the reconciliation of the changes in the balance sheet accounts. Also, it should permit the totals of the reconciling columns to be in agreement. When all changes have been explained and the reconciling columns are in agreement, the reconciling columns are ruled to complete the worksheet. The completed worksheet for Computer Services Company is shown in **Illustration 17B.3**.

**ILLUSTRATION 17B.3**

**Completed worksheet—indirect method**

Computer Services Company

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**Computer Services Company**
**Worksheet**
**Statement of Cash Flows For the Year Ended December 31, 2020**

| Balance Sheet Accounts | Balance 12/31/19 | Reconciling Items Debit | Reconciling Items Credit | Balance 12/31/20 |
|---|---|---|---|---|
| Debits | | | | |
| Cash | 33,000 | (o) 22,000 | | 55,000 |
| Accounts Receivable | 30,000 | | (a) 10,000 | 20,000 |
| Inventory | 10,000 | (b) 5,000 | | 15,000 |
| Prepaid Expenses | 1,000 | (c) 4,000 | | 5,000 |
| Land | 20,000 | (d)110,000* | | 130,000 |
| Buildings | 40,000 | (e)120,000 | | 160,000 |
| Equipment | 10,000 | (f) 25,000 | (g) 8,000 | 27,000 |
| Total | 144,000 | | | 412,000 |
| Credits | | | | |
| Accounts Payable | 12,000 | | (h) 16,000 | 28,000 |
| Income Taxes Payable | 8,000 | (i) 2,000 | | 6,000 |
| Bonds Payable | 20,000 | | (d)110,000* | 130,000 |
| Accumulated Depreciation—Buildings | 5,000 | | (k) 6,000 | 11,000 |
| Accumulated Depreciation—Equipment | 1,000 | (g) 1,000 | (l) 3,000 | 3,000 |
| Common Stock | 50,000 | | (j) 20,000 | 70,000 |
| Retained Earnings | 48,000 | (n) 29,000 | (m)145,000 | 164,000 |
| Total | 144,000 | | | 412,000 |
| Statement of Cash Flows Effects | | | | |
| Operating activities | | | | |
| Net income | | (m)145,000 | | |
| Decrease in accounts receivable | | (a) 10,000 | | |
| Increase in inventory | | | (b) 5,000 | |
| Increase in prepaid expenses | | | (c) 4,000 | |
| Increase in accounts payable | | (h) 16,000 | | |
| Decrease in income taxes payable | | | (i) 2,000 | |
| Depreciation expense | | (k) 6,000 | | |
| | | (l) 3,000 | | |
| Loss on disposal of plant assets | | (g) 3,000 | | |
| Investing activities | | | | |
| Purchase of building | | | (e)120,000 | |
| Purchase of equipment | | | (f) 25,000 | |
| Sale of equipment | | (g) 4,000 | | |
| Financing activities | | | | |
| Issuance of common stock | | (j) 20,000 | | |
| Payment of dividends | | | (n) 29,000 | |
| Totals | | 525,000 | 503,000 | |
| Increase in cash | | | (o) 22,000 | |
| Totals | | 525,000 | 525,000 | |

* Significant noncash investing and financing activity.

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# Appendix 17C Statement of Cash Flows—T-Account Approach

**LEARNING OBJECTIVE *6**

Use the T-account approach to prepare a statement of cash flows.

Many people like to use T-accounts to provide structure to the preparation of a statement of cash flows. The use of T-accounts is based on the accounting equation:

$$\textbf{Assets} = \textbf{Liabilities} + \textbf{Equity}$$

Now, let's rewrite the left-hand side as:

$$\textbf{Cash} + \textbf{Noncash Assets} = \textbf{Liabilities} + \textbf{Equity}$$

Next, rewrite the equation by subtracting Noncash Assets from each side to isolate Cash on the left-hand side:

$$\textbf{Cash} = \textbf{Liabilities} + \textbf{Equity} - \textbf{Noncash Assets}$$

Finally, if we insert the Δ symbol (which means "change in"), we have:

$$\Delta\,\textbf{Cash} = \Delta\,\textbf{Liabilities} + \Delta\,\textbf{Equity} - \Delta\,\textbf{Noncash Assets}$$

What this means is that the change in cash is equal to the change in all of the other balance sheet accounts. Another way to think about this is that if we analyze the changes in all of the noncash balance sheet accounts, we will explain the change in the Cash account. This, of course, is exactly what we are trying to do with the statement of cash flows.

To implement this approach, first prepare a large Cash T-account with sections for operating, investing, and financing activities. Then, prepare smaller T-accounts for all of the other noncash balance sheet accounts. Insert the beginning and ending balances for each of these accounts. Once you have done this, then walk through the steps outlined in Illustration 17.3. As you walk through the steps, enter debit and credit amounts into the affected accounts. When all of the changes in the T-accounts have been explained, you are done. To demonstrate, we apply this approach to the example of Computer Services Company that is presented in the chapter. Each of the adjustments in **Illustration 17C.1** is numbered so you can follow them through the T-accounts.

1. Post net income as a debit to the operating section of the Cash T-account and a credit to Retained Earnings. Make sure to label all adjustments to the Cash T-account. It also helps to number each adjustment so you can trace all of them if you make an error.
2. Post depreciation expense as a debit to the operating section of Cash and a credit to each of the appropriate accumulated depreciation accounts.
3. Post any gains or losses on the sale of property, plant, and equipment. To do this, it is best to first prepare the journal entry that was recorded at the time of the sale and then

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**ILLUSTRATION 17C.1** **T-account approach**

**Cash**

| | | | |
|---|---|---|---|
| **Operating** | | | |
| (1) Net income | 145,000 | 5,000 | Inventory (5) |
| (2) Depreciation expense | 9,000 | 4,000 | Prepaid expenses (6) |
| (3) Loss on equipment | 3,000 | 2,000 | Income taxes payable (8) |
| (4) Accounts receivable | 10,000 | | |
| (7) Accounts payable | 16,000 | | |
| Net cash provided by operating activities | 172,000 | | |
| **Investing** | | | |
| (3) Sold equipment | 4,000 | 120,000 | Purchased building (10) |
| | | 25,000 | Purchased equipment (11) |
| | | 141,000 | Net cash used by investing activities |
| **Financing** | | | |
| (12) Issued common stock | 20,000 | 29,000 | Dividend paid (13) |
| | | 9,000 | Net cash used by financing activities |
| Net increase in cash | 22,000 | | |

**Accounts Receivable**

| | |
|---|---|
| 30,000 | |
| | 10,000 (4) |
| 20,000 | |

**Inventory**

| | |
|---|---|
| 10,000 | |
| (5) 5,000 | |
| 15,000 | |

**Prepaid Expenses**

| | |
|---|---|
| 1,000 | |
| (6) 4,000 | |
| 5,000 | |

**Land**

| | |
|---|---|
| 20,000 | |
| (9) 110,000 | |
| 130,000 | |

**Buildings**

| | |
|---|---|
| 40,000 | |
| (10) 120,000 | |
| 160,000 | |

**Accumulated Depreciation—Buildings**

| | |
|---|---|
| | 5,000 |
| | 6,000 (2) |
| | 11,000 |

**Equipment**

| | |
|---|---|
| 10,000 | |
| (11) 25,000 | 8,000 (3) |
| 27,000 | |

**Accumulated Depreciation—Equipment**

| | |
|---|---|
| | 1,000 |
| (3) 1,000 | 3,000 (2) |
| | 3,000 |

**Accounts Payable**

| | |
|---|---|
| | 12,000 |
| | 16,000 (7) |
| | 28,000 |

**Income Taxes Payable**

| | |
|---|---|
| | 8,000 |
| (8) 2,000 | |
| | 6,000 |

**Bonds Payable**

| | |
|---|---|
| | 20,000 |
| | 110,000 (9) |
| | 130,000 |

**Common Stock**

| | |
|---|---|
| | 50,000 |
| | 20,000 (12) |
| | 70,000 |

**Retained Earnings**

| | |
|---|---|
| | 48,000 |
| | 145,000 (1) |
| (13) 29,000 | |
| | 164,000 |

post each element of the journal entry. For example, for Computer Services the entry was as follows.

| | | |
|---|---|---|
| Cash | 4,000 | |
| Accumulated Depreciation—Equipment | 1,000 | |
| Loss on Disposal of Plant Assets | 3,000 | |
| Equipment | | 8,000 |

The $4,000 cash entry is a source of cash in the investing section of the Cash account. Accumulated Depreciation—Equipment is debited for $1,000. The Loss on Disposal of Plant Assets (equipment) is a debit to the operating section of the Cash T-account. Finally, Equipment is credited for $8,000.

**4–8.** Next, post each of the changes to the noncash current asset and current liability accounts. For example, to explain the $10,000 decline in Computer Services' accounts receivable, credit Accounts Receivable for $10,000 and debit the operating section of the Cash T-account for $10,000.

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9. Analyze the changes in the noncurrent accounts. Land was purchased by issuing bonds payable. This requires a debit to Land for $110,000 and a credit to Bonds Payable for $110,000. Note that this is a significant noncash event that requires disclosure at the bottom of the statement of cash flows.
10. Buildings is debited for $120,000, and the investing section of the Cash T-account is credited for $120,000 as a use of cash from investing.
11. Equipment is debited for $25,000 and the investing section of the Cash T-account is credited for $25,000 as a use of cash from investing.
12. Common Stock is credited for $20,000 for the issuance of shares of stock, and the financing section of the Cash T-account is debited for $20,000.
13. Retained Earnings is debited to reflect the payment of the $29,000 dividend, and the financing section of the Cash T-account is credited to reflect the use of Cash.

At this point, all of the changes in the noncash accounts have been explained. All that remains is to subtotal each section of the Cash T-account and compare the total change in cash with the change shown on the balance sheet. Once this is done, the information in the Cash T-account can be used to prepare a statement of cash flows.

# Review and Practice

## Learning Objectives Review

### 1 Discuss the usefulness and format of the statement of cash flows.

The statement of cash flows provides information about the cash receipts, cash payments, and net change in cash resulting from the operating, investing, and financing activities of a company during the period. Operating activities include the cash effects of transactions that enter into the determination of net income. Investing activities involve cash flows resulting from changes in investments and long-term asset items. Financing activities involve cash flows resulting from changes in long-term liability and stockholders' equity items.

### 2 Prepare a statement of cash flows using the indirect method.

The preparation of a statement of cash flows involves three major steps. (1) Determine net cash provided/used by operating activities by converting net income from an accrual basis to a cash basis. (2) Analyze changes in noncurrent asset and liability accounts and stockholders' equity accounts and record as investing and financing activities, or disclose as noncash transactions. (3) Compare the net change in cash on the statement of cash flows with the change in the Cash account reported on the balance sheet to make sure the amounts agree.

### 3 Analyze the statement of cash flows.

Free cash flow indicates the amount of cash a company generated during the current year that is available for the payment of additional dividends or for expansion.

### *4 Prepare a statement of cash flows using the direct method.

The preparation of the statement of cash flows involves three major steps. (1) Determine net cash provided/used by adjusting each item in the income statement from the accrual basis to the cash basis. (2) Analyze changes in noncurrent asset and liability accounts and stockholders' equity accounts and record as investing and financing activities, or disclose as noncash transactions. (3) Compare the net change in cash on the statement of cash flows with the change in the Cash account reported on the balance sheet to make sure the amounts agree. The direct method reports cash receipts less cash payments to arrive at net cash provided by operating activities.

### *5 Use a worksheet to prepare the statement of cash flows using the indirect method.

When there are numerous adjustments, a worksheet can be a helpful tool in preparing the statement of cash flows. Key guidelines for using a worksheet are as follows. (1) List accounts with debit balances separately from those with credit balances. (2) In the reconciling columns in the bottom portion of the worksheet, show cash inflows as debits and cash outflows as credits. (3) Do not enter reconciling items in any journal or account, but use them only to help prepare the statement of cash flows.

The steps in preparing the worksheet are as follows. (1) Enter beginning and ending balances of balance sheet accounts. (2) Enter debits and credits in reconciling columns. (3) Enter the increase or decrease in cash in two places as a balancing amount.

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***6 Use the T-account approach to prepare a statement of cash flows.**

To use T-accounts to prepare the statement of cash flows: (1) prepare a large Cash T-account with sections for operating, investing, and financing activities; (2) prepare smaller T-accounts for all other noncash accounts; (3) insert beginning and ending balances for all balance sheet accounts; and (4) follows the steps in Illustration 17C.1, entering debit and credit amounts as needed.

## Glossary Review

***Direct method** A method of preparing a statement of cash flows that shows operating cash receipts and payments. It is prepared by adjusting each item in the income statement from the accrual basis to the cash basis. (pp. 17-7, 17-19).

**Financing activities** Cash flow activities that include (a) obtaining cash from issuing debt and repaying the amounts borrowed and (b) obtaining cash from stockholders, repurchasing shares, and paying dividends. (p. 17-3).

**Free cash flow** Net cash provided by operating activities adjusted for capital expenditures and cash dividends paid. (p. 17-17).

**Indirect method** A method of preparing a statement of cash flows in which net income is adjusted for items that do not affect cash, to determine net cash provided by operating activities. (pp. 17-7, 17-9).

**Investing activities** Cash flow activities that include (a) purchasing and disposing of investments and property, plant, and equipment using cash and (b) lending money and collecting the loans. (p. 17-3).

**Operating activities** Cash flow activities that include the cash effects of transactions that create revenues and expenses and thus enter into the determination of net income. (p. 17-3).

**Statement of cash flows** A basic financial statement that provides information about the cash receipts, cash payments, and net change in cash during a period, resulting from operating, investing, and financing activities. (p. 17-3).

## Practice Multiple-Choice Questions

**1. (LO 1)** Which of the following is **incorrect** about the statement of cash flows?

- **a.** It is a fourth basic financial statement.
- **b.** It provides information about cash receipts and cash payments of an entity during a period.
- **c.** It reconciles the ending Cash account balance to the balance per the bank statement.
- **d.** It provides information about the operating, investing, and financing activities of the business.

**2. (LO 1)** Which of the following is **not** reported in the statement of cash flows?

- **a.** The net change in stockholders' equity during the year.
- **b.** Cash payments for plant assets during the year.
- **c.** Cash receipts from sales of plant assets during the year.
- **d.** How acquisitions of plant assets during the year were financed.

**3. (LO 1)** The statement of cash flows classifies cash receipts and cash payments by these activities:

- **a.** operating and nonoperating.
- **b.** investing, financing, and operating.
- **c.** financing, operating, and nonoperating.
- **d.** investing, financing, and nonoperating.

**4. (LO 1)** Which is an example of a cash flow from an operating activity?

- **a.** Payment of cash to lenders for interest.
- **b.** Receipt of cash from the sale of common stock.
- **c.** Payment of cash dividends to the company's stockholders.
- **d.** None of the above.

**5. (LO 1)** Which is an example of a cash flow from an investing activity?

- **a.** Receipt of cash from the issuance of bonds payable.
- **b.** Payment of cash to repurchase outstanding common stock.
- **c.** Receipt of cash from the sale of equipment.
- **d.** Payment of cash to suppliers for inventory.

**6. (LO 1)** Cash dividends paid to stockholders are classified on the statement of cash flows as:

- **a.** an operating activity.
- **b.** an investing activity.
- **c.** a combination of (a) and (b).
- **d.** a financing activity.

**7. (LO 1)** Which is an example of a cash flow from a financing activity?

- **a.** Receipt of cash from sale of land.
- **b.** Issuance of debt for cash.
- **c.** Purchase of equipment for cash.
- **d.** None of the above.

**8. (LO 1)** Which of the following is **incorrect** about the statement of cash flows?

- **a.** The direct method may be used to report net cash provided by operating activities.
- **b.** The statement shows the net cash provided (used) for three categories of activity.
- **c.** The operating section is the last section of the statement.
- **d.** The indirect method may be used to report net cash provided by operating activities.

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**Use the indirect method to solve Questions 9 through 11.**

**9.** **(LO 2)** Net income is $132,000, accounts payable increased $10,000 during the year, inventory decreased $6,000 during the year, and accounts receivable increased $12,000 during the year. Under the indirect method, what is net cash provided by operating activities?

**a.** $102,000. **c.** $124,000.
**b.** $112,000. **d.** $136,000.

**10.** **(LO 2)** Items that are added back to net income in determining net cash provided by operating activities under the indirect method do **not** include:

**a.** depreciation expense.
**b.** an increase in inventory.
**c.** amortization expense.
**d.** loss on disposal of plant assets.

**11.** **(LO 2)** The following data are available for Allen Clapp Corporation.

| | |
|---|---|
| Net income | $200,000 |
| Depreciation expense | 40,000 |
| Dividends paid | 60,000 |
| Gain on sale of land | 10,000 |
| Decrease in accounts receivable | 20,000 |
| Decrease in accounts payable | 30,000 |

Net cash provided by operating activities is:

**a.** $160,000. **c.** $240,000.
**b.** $220,000. **d.** $280,000.

**12.** **(LO 2)** The following data are available for Orange Peels Corporation.

| | |
|---|---|
| Proceeds from sale of land | $100,000 |
| Proceeds from sale of equipment | 50,000 |
| Issuance of common stock | 70,000 |
| Purchase of equipment | 30,000 |
| Payment of cash dividends | 60,000 |

Net cash provided by investing activities is:

**a.** $120,000. **c.** $150,000.
**b.** $130,000. **d.** $190,000.

**13.** **(LO 2)** The following data are available for Something Strange!

| | |
|---|---|
| Increase in accounts payable | $ 40,000 |
| Increase in bonds payable | 100,000 |
| Sale of investment | 50,000 |
| Issuance of common stock | 60,000 |
| Payment of cash dividends | 30,000 |

Net cash provided by financing activities is:

**a.** $90,000. **c.** $160,000.
**b.** $130,000. **d.** $170,000.

**14.** **(LO 3)** The statement of cash flows should **not** be used to evaluate an entity's ability to:

**a.** earn net income.
**b.** generate future cash flows.
**c.** pay dividends.
**d.** meet obligations.

**15.** **(LO 3)** Free cash flow provides an indication of a company's ability to:

**a.** manage inventory.
**b.** generate cash to pay additional dividends.
**c.** generate cash to invest in new capital expenditures.
**d.** Both (b) and (c).

**Use the direct method to solve Questions 16 and 17.**

***16.** **(LO 4)** The beginning balance in accounts receivable is $44,000, the ending balance is $42,000, and sales during the period are $129,000. What are cash receipts from customers?

**a.** $127,000. **c.** $131,000.
**b.** $129,000. **d.** $141,000.

***17.** **(LO 4)** Which of the following items is reported on a statement of cash flows prepared by the direct method?

**a.** Loss on sale of building.
**b.** Increase in accounts receivable.
**c.** Depreciation expense.
**d.** Cash payments to suppliers.

***18.** **(LO 5)** In a worksheet for the statement of cash flows, a decrease in accounts receivable is entered in the reconciling columns as a credit to Accounts Receivable and a debit in the:

**a.** investing activities section.
**b.** operating activities section.
**c.** financing activities section.
**d.** None of the above.

***19.** **(LO 5)** In a worksheet for the statement of cash flows, a worksheet entry that includes a credit to accumulated depreciation will also include a:

**a.** credit in the operating activities section and a debit in another section.
**b.** debit in the operating activities section.
**c.** debit in the investing activities section.
**d.** debit in the financing activities section.

## Solutions

**1.** **c.** The statement of cash flows does not reconcile the ending cash balance to the balance per the bank statement. The other choices are true statements.

**2.** **a.** The net change in stockholders' equity during the year is not reported in the statement of cash flows. The other choices are true statements.

**3.** **b.** Operating, investing, and financing activities are the three classifications of cash receipts and cash payments used in the statement of cash flows. The other choices are therefore incorrect.

**4.** **a.** Payment of cash to lenders for interest is an operating activity. The other choices are incorrect because (b) receipt of cash from the sale of common stock is a financing activity, (c) payment of cash dividends to the company's stockholders is a financing activity, and (d) there is a correct answer.

**5.** **c.** Receipt of cash from the sale of equipment is an investing activity. The other choices are incorrect because (a) the receipt of cash from the issuance of bonds payable is a financing activity, (b) payment of cash to repurchase outstanding common stock is a financing activity, and (d) payment of cash to suppliers for inventory is an operating activity.

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**6. d.** Cash dividends paid to stockholders are classified as a financing activity, not (a) an operating activity, (b) an investing activity, or (c) a combination of (a) and (b).

**7. b.** Issuance of debt for cash is a financing activity. The other choices are incorrect because (a) the receipt of cash from the sale of land is an investing activity, (c) the purchase of equipment for cash is an investing activity, and (d) there is a correct answer.

**8. c.** The operating section of the statement of cash flows is the first, not the last, section of the statement. The other choices are true statements.

**9. d.** Net cash provided by operating activities is computed by adjusting net income for the changes in the three current asset/current liability accounts listed. An increase in accounts payable ($10,000) and a decrease in inventory ($6,000) are added to net income ($132,000), while an increase in accounts receivable ($12,000) is subtracted from net income, or $132,000 + $10,000 + $6,000 – $12,000 = $136,000, not (a) $102,000, (b) $112,000, or (c) $124,000.

**10. b.** An increase in inventory is subtracted, not added, to net income in determining net cash provided by operating activities. The other choices are incorrect because (a) depreciation expense, (c) amortization expense, and (d) loss on disposal of plant assets are all added back to net income in determining net cash provided by operating activities.

**11. b.** Net cash provided by operating activities is $220,000 (Net income $200,000 + Depreciation expense $40,000 – Gain on sale of land $10,000 + Decrease in accounts receivable $20,000 – Decrease in accounts payable $30,000), not (a) $160,000, (c) $240,000, or (d) $280,000.

**12. a.** Net cash provided by investing activities is $120,000 (Sale of land $100,000 + Sale of equipment $50,000 – Purchase of equipment $30,000), not (b) $130,000, (c) $150,000, or (d) $190,000. Issuance of common stock and payment of cash dividends are financing activities.

**13. b.** Net cash provided by financing activities is $130,000 (Increase in bonds payable $100,000 + Issuance of common stock $60,000 – Payment of cash dividends $30,000), not (a) $90,000, (c) $160,000, or (d) $170,000. Increase in accounts payable is an operating activity and sale of investment is an investing activity.

**14. a.** The statement of cash flows is not used to evaluate an entity's ability to earn net income. The other choices are true statements.

**15. d.** Free cash flow provides an indication of a company's ability to generate cash to pay additional dividends and to invest in new capital expenditures. Choice (a) is incorrect because other measures besides free cash flow provide the best measure of a company's ability to manage inventory. Choices (b) and (c) are true statements, but (d) is the better answer.

***16. c.** Cash from customers amount to $131,000 ($129,000 + $2,000 (decrease in accounts receivable)). The other choices are therefore incorrect.

***17. d.** Cash payments to suppliers are reported on a statement of cash flows prepared by the direct method. The other choices are incorrect because (a) loss on sale of building, (b) increase in accounts receivable, and (c) depreciation expense are reported in the operating activities section of the statement of cash flows when the indirect, not direct, method is used.

***18. b.** Because accounts receivable is a current asset, the debit belongs in the operating activities section of the worksheet, not in the (a) investing activities or (c) financing activities section. Choice (d) is incorrect as there is a right answer.

***19. b.** A worksheet entry that includes a credit to accumulated depreciation will also include a debit to depreciation expense. This debit in the operating activities section of the statement of cash flows will be added to the net income to determine net cash provided by operating activities. The other choices are therefore incorrect.

## Practice Brief Exercises

*Identify investing activity transactions.*

**1. (LO 1)** The following is a summary of the Cash account of Covey Company:

**Cash (Summary Form)**

| | | | |
|---|---|---|---|
| Balance, Jan. 1 | 8,000 | | |
| Receipts from customers | 364,000 | Payments for goods | 200,000 |
| Dividends on stock investments | 6,000 | Payments for operating expenses | 140,000 |
| Proceeds from sale of land | 96,000 | Purchase of equipment | 70,000 |
| Proceeds from issuance of bonds payable | 300,000 | Taxes paid | 8,000 |
| | | Dividends paid | 50,000 |
| Balance, Dec. 31 | 306,000 | | |

What amount of net cash provided (used) by investing activities should be reported in the statement of cash flows?

### Solution

**1.** Cash flows from investing activities

| | |
|---|---|
| Proceeds from sale of land | $96,000 |
| Purchase of equipment | (70,000) |
| Net cash provided by financing activities | $26,000 |

*Compute net cash provided by operating activities—indirect method.*

**2. (LO 2)** Engel, Inc. reported net income of $1.6 million in 2020. Depreciation for the year was $140,000, accounts receivable increased $250,000, and accounts payable increased $210,000. The company also had a gain on disposal of plant assets of $19,000. Compute net cash provided by operating activities using the indirect method.

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### Solution

| | | |
|---|---|---|
| **2.** Net income | | $1,600,000 |
| Adjustments to reconcile net income to net cash provided by operating activities | | |
| Depreciation expense | $ 140,000 | |
| Gain on disposal of plant assets | (19,000) | |
| Accounts receivable increase | (250,000) | |
| Accounts payable increase | 210,000 | 81,000 |
| Net cash provided by operating activities | | $1,681,000 |

**3.** **(LO 3)** Goldberg Corporation reported net cash provided by operating activities of $410,000, net cash used by investing activities of $200,000 (including cash spent for equipment of $160,000), and net cash provided by financing activities of $60,000. Dividends of $110,000 were paid. Calculate free cash flow.

*Calculate free cash flow.*

### Solution

**3.** Free cash flow = $410,000 − $160,000 − $110,000 = $140,000

## Practice Exercises

**1.** **(LO 2)** Furst Corporation had the following transactions.

*Prepare journal entries to determine effect on statement of cash flows.*

1. Paid salaries of $14,000.
2. Issued 1,000 shares of $1 par value common stock for equipment worth $16,000.
3. Sold equipment (cost $10,000, accumulated depreciation $6,000) for $3,000.
4. Sold land (cost $12,000) for $16,000.
5. Issued another 1,000 shares of $1 par value common stock for $18,000.
6. Recorded depreciation of $20,000.

### Instructions

For each transaction above, **(a)** prepare the journal entry, and **(b)** indicate how it would affect the statement of cash flows. Assume the indirect method.

### Solution

**1. 1. a.**

| | | |
|---|---|---|
| Salaries and Wages Expense | 14,000 | |
| Cash | | 14,000 |

**b.** Salaries and wages expense is not reported separately on the statement of cash flows. It is part of the computation of net income in the income statement and is included in the net income amount on the statement of cash flows.

**2. a.**

| | | |
|---|---|---|
| Equipment | 16,000 | |
| Common Stock | | 1,000 |
| Paid-in Capital in Excess of Par—Common Stock | | 15,000 |

**b.** The issuance of common stock for equipment ($16,000) is reported as a noncash financing and investing activity at the bottom of the statement of cash flows.

**3. a.**

| | | |
|---|---|---|
| Cash | 3,000 | |
| Loss on Disposal of Plant Assets | 1,000 | |
| Accumulated Depreciation—Equipment | 6,000 | |
| Equipment | | 10,000 |

**b.** The cash receipt ($3,000) is reported in the investing section. The loss ($1,000) is added to net income in the operating section.

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**4. a.**

| | | |
|---|---|---|
| Cash | 16,000 | |
| Land | | 12,000 |
| Gain on Disposal of Plant Assets | | 4,000 |

**b.** The cash receipt ($16,000) is reported in the investing section. The gain ($4,000) is deducted from net income in the operating section.

**5. a.**

| | | |
|---|---|---|
| Cash | 18,000 | |
| Common Stock | | 1,000 |
| Paid-in Capital in Excess of Par—Common Stock | | 17,000 |

**b.** The cash receipt ($18,000) is reported in the financing section.

**6. a.**

| | | |
|---|---|---|
| Depreciation Expense | 20,000 | |
| Accumulated Depreciation—Equipment | | 20,000 |

**b.** Depreciation expense ($20,000) is added to net income in the operating section.

*Prepare statement of cash flows and compute free cash flow.*

**2. (LO 2, 3) Financial Statement** Strong Corporation's comparative balance sheets are presented below.

**Strong Corporation**
**Comparative Balance Sheets**
**December 31**

| | 2020 | 2019 |
|---|---|---|
| Cash | $ 28,200 | $ 17,700 |
| Accounts receivable | 24,200 | 22,300 |
| Investments | 23,000 | 16,000 |
| Equipment | 60,000 | 70,000 |
| Accumulated depreciation—equipment | (14,000) | (10,000) |
| Total | $121,400 | $116,000 |
| Accounts payable | $ 19,600 | $ 11,100 |
| Bonds payable | 10,000 | 30,000 |
| Common stock | 60,000 | 45,000 |
| Retained earnings | 31,800 | 29,900 |
| Total | $121,400 | $116,000 |

Additional information:

1. Net income was $28,300. Dividends declared and paid were $26,400.
2. Equipment which cost $10,000 and had accumulated depreciation of $1,200 was sold for $4,300.
3. All other changes in noncurrent account balances had a direct effect on cash flows, except the change in accumulated depreciation.

**Instructions**

**a.** Prepare a statement of cash flows for 2020 using the indirect method.

**b.** Compute free cash flow.

**Solution**

**2. a.**

**Strong Corporation**
**Statement of Cash Flows**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Net income | | $ 28,300 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | |
| Depreciation expense | $ 5,200* | |
| Loss on disposal of plant assets | 4,500** | |

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| | | |
|---|---|---|
| Increase in accounts payable | 8,500 | |
| Increase in accounts receivable | (1,900) | 16,300 |
| Net cash provided by operating activities | | 44,600 |
| Cash flows from investing activities | | |
| Sale of equipment | 4,300 | |
| Purchase of investments | (7,000) | |
| Net cash used by investing activities | | (2,700) |
| Cash flows from financing activities | | |
| Issuance of common stock | 15,000 | |
| Retirement of bonds | (20,000) | |
| Payment of dividends | (26,400) | |
| Net cash used by financing activities | | (31,400) |
| Net increase in cash | | 10,500 |
| Cash at beginning of period | | 17,700 |
| Cash at end of period | | $ 28,200 |

*[$14,000 – ($10,000 – $1,200)]; **[$4,300 – ($10,000 – $1,200)]

**b.** $44,600 – $0 – $26,400 = $18,200

## Practice Problem

**(LO 2, 4)** **Financial Statement** The income statement for the year ended December 31, 2020, for Kosinski Manufacturing Company contains the following condensed information.

*Prepare statement of cash flows using indirect and direct methods.*

**Kosinski Manufacturing Company**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Sales revenue | | $6,583,000 |
| Cost of goods sold | $2,810,000 | |
| Operating expenses (excluding depreciation) | 2,086,000 | |
| Depreciation expense | 880,000 | |
| Loss on disposal of plant assets | 24,000 | 5,800,000 |
| Income before income taxes | | 783,000 |
| Income tax expense | | 353,000 |
| Net income | | $ 430,000 |

The $24,000 loss resulted from selling equipment for $270,000 cash. Equipment was purchased at a cost of $750,000.

The following balances are reported on Kosinski's comparative balance sheets at December 31.

**Kosinski Manufacturing Company**
**Comparative Balance Sheets (partial)**

| | 2020 | 2019 |
|---|---|---|
| Cash | $672,000 | $130,000 |
| Accounts receivable | 775,000 | 610,000 |
| Inventory | 834,000 | 867,000 |
| Accounts payable | 521,000 | 501,000 |

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Income tax expense of $353,000 represents the amount paid in 2020. Dividends declared and paid in 2020 totaled $200,000.

**Instructions**

**a.** Prepare the statement of cash flows using the indirect method.

***b.** Prepare the statement of cash flows using the direct method.

**Solution**

**a.**

**Kosinski Manufacturing Company**
**Statement of Cash Flows—Indirect Method**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Net income | | $ 430,000 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | |
| Depreciation expense | $ 880,000 | |
| Loss on disposal of plant assets | 24,000 | |
| Increase in accounts receivable | (165,000) | |
| Decrease in inventory | 33,000 | |
| Increase in accounts payable | 20,000 | 792,000 |
| Net cash provided by operating activities | | 1,222,000 |
| Cash flows from investing activities | | |
| Sale of equipment | 270,000 | |
| Purchase of equipment | (750,000) | |
| Net cash used by investing activities | | (480,000) |
| Cash flows from financing activities | | |
| Payment of cash dividends | (200,000) | |
| Net cash used by financing activities | | (200,000) |
| Net increase in cash | | 542,000 |
| Cash at beginning of period | | 130,000 |
| Cash at end of period | | $ 672,000 |

***b.**

**Kosinski Manufacturing Company**
**Statement of Cash Flows—Direct Method**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Cash collections from customers | | $6,418,000* |
| Less: Cash payments: | | |
| To suppliers | $2,757,000** | |
| For operating expenses | 2,086,000 | |
| For income taxes | 353,000 | 5,196,000 |
| Net cash provided by operating activities | | 1,222,000 |
| Cash flows from investing activities | | |
| Sale of equipment | 270,000 | |
| Purchase of equipment | (750,000) | |
| Net cash used by investing activities | | (480,000) |

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| | | |
|---|---|---|
| Cash flows from financing activities | | |
| Payment of cash dividends | (200,000) | |
| Net cash used by financing activities | | (200,000) |
| Net increase in cash | | 542,000 |
| Cash at beginning of period | | 130,000 |
| Cash at end of period | | $ 672,000 |

*Direct-Method Computations:*

| | |
|---|---|
| *Computation of cash collections from customers: | |
| Sales revenue | $6,583,000 |
| Deduct: Increase in accounts receivable | (165,000) |
| Cash collections from customers | $6,418,000 |
| **Computation of cash payments to suppliers | |
| Cost of goods sold per income statement | $2,810,000 |
| Deduct: Decrease in inventories | (33,000) |
| Deduct: Increase in accounts payable | (20,000) |
| Cash payments to suppliers | $2,757,000 |

## WileyPLUS

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*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendices to the chapter.

## Questions

**1.** **a.** What is a statement of cash flows?

**b.** Mark Paxson maintains that the statement of cash flows is an optional financial statement. Do you agree? Explain.

**2.** What questions about cash are answered by the statement of cash flows?

**3.** Distinguish among the three types of activities reported in the statement of cash flows.

**4.** **a.** What are the major sources (inflows) of cash in a statement of cash flows?

**b.** What are the major uses (outflows) of cash?

**5.** Why is it important to disclose certain noncash transactions? How should they be disclosed?

**6.** Diane Hollowell and Terry Parmenter were discussing the format of the statement of cash flows of Snow Candy Co. At the bottom of Snow Candy's statement of cash flows was a separate section entitled "Noncash investing and financing activities." Give three examples of significant noncash transactions that would be reported in this section.

**7.** Why is it necessary to use comparative balance sheets, a current income statement, and certain transaction data in preparing a statement of cash flows?

**8.** Contrast the advantages and disadvantages of the direct and indirect methods of preparing the statement of cash flows. Are both methods acceptable? Which method is preferred by the FASB? Which method is more popular?

**9.** When the total cash inflows exceed the total cash outflows in the statement of cash flows, how and where is this excess identified?

**10.** Describe the indirect method for determining net cash provided (used) by operating activities.

**11.** Why is it necessary to convert accrual-basis net income to cash-basis income when preparing a statement of cash flows?

**12.** The president of Merando Company is puzzled. During the last year, the company experienced a net loss of $800,000, yet its cash increased $300,000 during the same period of time. Explain to the president how this could occur.

**13.** Identify five items that are adjustments to convert net income to net cash provided by operating activities under the indirect method.

**14.** Why and how is depreciation expense reported in a statement of cash flows prepared using the indirect method?

**15.** Why is the statement of cash flows useful?

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**16.** During 2020, Doubleday Company converted $1,700,000 of its total $2,000,000 of bonds payable into common stock. Indicate how the transaction would be reported on a statement of cash flows, if at all.

**17.** In its 2015 statement of cash flows, what amount did **Apple** report for net cash (a) provided by operating activities, (b) used for investing activities, and (c) used for financing activities?

***18.** Describe the direct method for determining net cash provided by operating activities.

***19.** Give the formulas under the direct method for computing (a) cash receipts from customers and (b) cash payments to suppliers.

***20.** Molino Inc. reported sales revenue of $2 million for 2020. Accounts receivable decreased $200,000 and accounts payable increased $300,000. Compute cash receipts from customers, assuming that the receivable and payable transactions related to operations.

***21.** In the direct method, why is depreciation expense not reported in the cash flows from operating activities section?

***22.** Why is it advantageous to use a worksheet when preparing a statement of cash flows? Is a worksheet required to prepare a statement of cash flows?

## Brief Exercises

*Indicate statement presentation of selected transactions.*

**BE17.1 (LO 1)** Each of the items below must be considered in preparing a statement of cash flows for Baskerville Co. for the year ended December 31, 2020. For each item, state how it should be shown in the statement of cash flows for 2020 if the indirect method is used.

**a.** Issued bonds for $200,000 cash.

**b.** Purchased equipment for $150,000 cash.

**c.** Sold land costing $20,000 for $20,000 cash.

**d.** Declared and paid a $50,000 cash dividend.

*Classify items by activities.*

**BE17.2 (LO 1)** Classify each item as an operating, investing, or financing activity. Assume all items involve cash unless there is information to the contrary.

**a.** Purchase of equipment.

**b.** Proceeds from sale of building.

**c.** Redemption of bonds payable.

**d.** Cash received from sale of goods.

**e.** Payment of dividends.

**f.** Issuance of common stock.

*Identify financing activity transactions.*

**BE17.3 (LO 1)** The following T-account is a summary of the Cash account of Cuellar Company.

**Cash (Summary Form)**

| | | | |
|---|---|---|---|
| Balance, Jan. 1 | 8,000 | | |
| Receipts from customers | 364,000 | Payments for goods | 200,000 |
| Dividends on stock investments | 6,000 | Payments for operating expenses | 140,000 |
| Proceeds from sale of equipment | 36,000 | Interest paid | 10,000 |
| Proceeds from issuance of bonds payable | 300,000 | Taxes paid | 8,000 |
| | | Dividends paid | 50,000 |
| Balance, Dec. 31 | 306,000 | | |

What amount of net cash provided (used) by financing activities should be reported in the statement of cash flows?

*Compute net cash provided by operating activities—indirect method.*

**BE17.4 (LO 2)** Telfer, Inc. reported net income of $2.8 million in 2020. Depreciation for the year was $160,000, accounts receivable decreased $350,000, and accounts payable decreased $280,000. Compute net cash provided by operating activities using the indirect method.

*Compute net cash provided by operating activities—indirect method.*

**BE17.5 (LO 2)** The net income for Metz Co. for 2020 was $280,000. For 2020, depreciation on plant assets was $70,000, and the company incurred a loss on disposal of plant assets of $12,000. Compute net cash provided by operating activities under the indirect method, assuming there were no other relevant changes in the company's accounts.

*Compute net cash provided by operating activities—indirect method.*

**BE17.6 (LO 2)** The comparative balance sheets for Montalvo Company show these changes in noncash current asset accounts: accounts receivable decrease $80,000, prepaid expenses increase $28,000, and inventories increase $30,000. Compute net cash provided by operating activities using the indirect method assuming that net income is $300,000.

*Determine cash received from sale of equipment.*

**BE17.7 (LO 2)** The T-accounts for Equipment and the related Accumulated Depreciation—Equipment for Luo Company at the end of 2020 are shown here.

**Equipment**

| | | | |
|---|---|---|---|
| Beg. bal. | 80,000 | Disposals | 22,000 |
| Acquisitions | 41,600 | | |
| End. bal. | 99,600 | | |

**Accumulated Depreciation—Equipment**

| | | | |
|---|---|---|---|
| Disposals | 5,500 | Beg. bal. | 44,500 |
| | | Depr. exp. | 12,000 |
| | | End. bal. | 51,000 |

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In addition, Luo's income statement reported a loss on the disposal of plant assets of $6,500. What amount was reported on the statement of cash flows as "cash flow from sale of equipment"?

**BE17.8 (LO 3)** Assume that during 2020, **Cypress Semiconductor Corporation** reported net cash provided by operating activities of $155,793,000, net cash used in investing activities of $207,826,000 (including cash spent for plant assets of $132,280,000), and net cash used in financing activities of $33,372,000. Dividends of $5,000,000 were paid. Calculate free cash flow. *Calculate free cash flow.*

**BE17.9 (LO 3)** Hinck Corporation reported net cash provided by operating activities of $360,000, net cash used by investing activities of $250,000 (including cash spent for capital assets of $200,000), and net cash provided by financing activities of $70,000. Dividends of $140,000 were paid. Calculate free cash flow. *Calculate free cash flow.*

**BE17.10 (LO 3)** Suppose in a recent quarter, **Alliance Atlantis Communications Inc.** reported net cash provided by operating activities of $45,600,000 and revenues of $264,800,000. Cash spent on plant asset additions during the quarter was $1,600,000. No dividends were paid. Calculate free cash flow. *Calculate free cash flow.*

**BE17.11 (LO 3)** The management of Morrow Inc. is trying to decide whether it can increase its dividend. During the current year, it reported net income of $875,000. It had net cash provided by operating activities of $734,000, paid cash dividends of $70,000, and had capital expenditures of $280,000. Compute the company's free cash flow, and discuss whether an increase in the dividend appears warranted. What other factors should be considered? *Calculate and analyze free cash flow.*

***BE17.12 (LO 4)** Suppose **Columbia Sportswear Company** had accounts receivable of $206,024,000 at the beginning of a recent year, and $267,653,000 at year-end. Sales revenue was $1,095,307,000 for the year. What is the amount of cash receipts from customers? *Compute receipts from customers—direct method.*

***BE17.13 (LO 4)** Howell Corporation reported income tax expense of $340,000,000 on its 2020 income statement and income taxes payable of $297,000,000 at December 31, 2019, and $522,000,000 at December 31, 2020. What amount of cash payments were made for income taxes during 2020? *Compute cash payments for income taxes—direct method.*

***BE17.14 (LO 4)** Sisson Corporation reports operating expenses of $80,000 excluding depreciation expense of $15,000 for 2020. During the year, prepaid expenses decreased $6,600 and accrued expenses payable increased $4,400. Compute the cash payments for operating expenses in 2020. *Compute cash payments for operating expenses—direct method.*

***BE17.15 (LO 5)** During the year, prepaid expenses decreased $5,600, and accrued expenses increased $2,400. Indicate how the changes in prepaid expenses and accrued expenses payable should be entered in the reconciling columns of a worksheet. Assume that beginning balances were prepaid expenses $18,600 and accrued expenses payable $8,200. *Indicate entries in worksheet.*

## DO IT! Exercises

**DO IT! 17.1 (LO 1)** Ragsdell Corporation had the following transactions. *Classify transactions by type of cash flow activity.*

1. Issued $200,000 of bonds payable.
2. Paid utilities expense.
3. Issued 500 shares of preferred stock for $45,000.
4. Sold land and a building for $250,000.
5. Lent $30,000 to Tegtmeier Corporation, receiving Tegtmeier's 1-year, 12% note.

Classify each of these transactions by type of cash flow activity (operating, investing, or financing).

**DO IT! 17.2a (LO 2)** Wise Photography reported net income of $130,000 for 2020. Included in the income statement were depreciation expense of $6,000, amortization expense of $2,000, and a gain on disposal of plant assets of $3,600. Wise's comparative balance sheets show the following balances. *Calculate net cash from operating activities.*

| | 12/31/19 | 12/31/20 |
|---|---|---|
| Accounts receivable | $27,000 | $21,000 |
| Accounts payable | 6,000 | 9,200 |

Calculate net cash provided by operating activities for Wise Photography.

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*Prepare statement of cash flows—indirect method.*

**DO IT! 17.2b (LO 2)** **Financial Statement** Alex Company reported the following information for 2020.

**Alex Company**
**Comparative Balance Sheets**
**December 31**

| Assets | 2020 | 2019 | Change Increase/Decrease |
|---|---|---|---|
| Cash | $ 59,000 | $ 36,000 | $ 23,000 Increase |
| Accounts receivable | 62,000 | 22,000 | 40,000 Increase |
| Inventory | 44,000 | –0– | 44,000 Increase |
| Prepaid expenses | 6,000 | 4,000 | 2,000 Increase |
| Land | 55,000 | 70,000 | 15,000 Decrease |
| Buildings | 200,000 | 200,000 | –0– |
| Accumulated depreciation—buildings | (21,000) | (14,000) | 7,000 Increase |
| Equipment | 183,000 | 68,000 | 115,000 Increase |
| Accumulated depreciation—equipment | (28,000) | (10,000) | 18,000 Increase |
| Totals | $560,000 | $376,000 | |
| **Liabilities and Stockholders' Equity** | | | |
| Accounts payable | $ 43,000 | $ 40,000 | $ 3,000 Increase |
| Accrued expenses payable | –0– | 10,000 | 10,000 Decrease |
| Bonds payable | 100,000 | 150,000 | 50,000 Decrease |
| Common stock ($1 par) | 230,000 | 60,000 | 170,000 Increase |
| Retained earnings | 187,000 | 116,000 | 71,000 Increase |
| Totals | $560,000 | $376,000 | |

**Alex Company**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Sales revenue | | $941,000 |
| Cost of goods sold | $475,000 | |
| Operating expenses | 231,000 | |
| Interest expense | 12,000 | |
| Loss on disposal of plant assets | 2,000 | 720,000 |
| Income before income taxes | | 221,000 |
| Income tax expense | | 65,000 |
| Net income | | $156,000 |

Additional information:

1. Operating expenses include depreciation expense of $40,000.
2. Land was sold at its book value for cash.
3. Cash dividends of $85,000 were declared and paid in 2020.
4. Equipment with a cost of $166,000 was purchased for cash. Equipment with a cost of $51,000 and a book value of $36,000 was sold for $34,000 cash.
5. Bonds of $50,000 were redeemed at their face value for cash.
6. Common stock ($1 par) of $170,000 was issued for cash.

Use this information to prepare a statement of cash flows using the indirect method.

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**DO IT! 17.3 (LO 3)** Obermeyer Corporation issued the following statement of cash flows for 2020. *Compute and discuss free cash flow.*

**Obermeyer Corporation**
**Statement of Cash Flows—Indirect Method**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Cash flows from operating activities | | |
| Net income | | $59,000 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | |
| Depreciation expense | $ 9,100 | |
| Loss on disposal of plant assets | 9,500 | |
| Increase in inventory | (5,000) | |
| Decrease in accounts receivable | 3,300 | |
| Decrease in accounts payable | (2,200) | 14,700 |
| Net cash provided by operating activities | | 73,700 |
| Cash flows from investing activities | | |
| Sale of investments | 3,100 | |
| Purchase of equipment | (27,000) | |
| Net cash used by investing activities | | (23,900) |
| Cash flows from financing activities | | |
| Issuance of stock | 20,000 | |
| Payment on long-term note payable | (10,000) | |
| Payment for dividends | (15,000) | |
| Net cash used by financing activities | | (5,000) |
| Net increase in cash | | 44,800 |
| Cash at beginning of year | | 13,000 |
| Cash at end of year | | $57,800 |

(a) Compute free cash flow for Obermeyer Corporation. (b) Explain why free cash flow often provides better information than "Net cash provided by operating activities."

## Exercises

**E17.1 (LO 1)** Tabares Corporation had these transactions during 2020. *Classify transactions by type of activity.*

**a.** Issued $50,000 par value common stock for cash.
**b.** Purchased a machine for $30,000, giving a long-term note in exchange.
**c.** Issued $200,000 par value common stock upon conversion of bonds having a face value of $200,000.
**d.** Declared and paid a cash dividend of $18,000.
**e.** Sold a long-term investment with a cost of $15,000 for $15,000 cash.
**f.** Collected $16,000 from sale of goods.
**g.** Paid $18,000 to suppliers.

### Instructions

Indicate whether each transaction is an operating activity, investing activity, financing activity, or noncash investing and financing activity.

**E17.2 (LO 1)** An analysis of comparative balance sheets, the current year's income statement, and the general ledger accounts of Wellman Corp. uncovered the following items. Assume all items involve cash unless there is information to the contrary. *Classify transactions by type of activity.*

**a.** Payment of interest on notes payable.
**b.** Exchange of land for patent.
**c.** Sale of building at book value.
**d.** Payment of dividends.
**e.** Depreciation.
**f.** Receipt of dividends on investment in stock.
**g.** Receipt of interest on notes receivable.
**h.** Issuance of common stock.
**i.** Amortization of patent.
**j.** Issuance of bonds for land.
**k.** Purchase of land.
**l.** Conversion of bonds into common stock.
**m.** Sale of land at a loss.
**n.** Retirement of bonds.

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**Instructions**

Indicate how each item should be classified in the statement of cash flows (indirect method) using these four major classifications: operating activity (that is, the item would be included in net income or listed among the adjustments to net income to determine net cash provided by operating activities under the indirect method), investing activity, financing activity, and significant noncash investing and financing activity.

*Prepare journal entry and determine effect on cash flows.*

**E17.3 (LO 1)** Cushenberry Corporation had the following transactions.

1. Sold land (cost $12,000) for $15,000.
2. Issued common stock at par for $20,000.
3. Recorded depreciation on buildings for $17,000.
4. Paid salaries of $9,000.
5. Issued 1,000 shares of $1 par value common stock for equipment worth $8,000.
6. Sold equipment (cost $10,000, accumulated depreciation $7,000) for $1,200.

**Instructions**

For each transaction above, (a) prepare the journal entry, and (b) indicate how it would affect the statement of cash flows using the indirect method.

*Prepare the operating activities section—indirect method.*

**E17.4 (LO 2)** **Financial Statement** Gutierrez Company reported net income of $225,000 for 2020. Gutierrez also reported depreciation expense of $45,000 and a loss of $5,000 on the disposal of plant assets. The comparative balance sheet shows a decrease in accounts receivable of $15,000 for the year, a $17,000 increase in accounts payable, and a $4,000 decrease in prepaid expenses.

**Instructions**

Prepare the operating activities section of the statement of cash flows for 2020. Use the indirect method.

*Prepare the operating activities section—indirect method.*

**E17.5 (LO 2)** **Financial Statement** The current sections of Scoggin Inc.'s balance sheets at December 31, 2019 and 2020, are presented here. Scoggin's net income for 2020 was $153,000. Depreciation expense was $24,000.

| | 2020 | 2019 |
|---|---|---|
| Current assets | | |
| Cash | $105,000 | $ 99,000 |
| Accounts receivable | 110,000 | 89,000 |
| Inventory | 158,000 | 172,000 |
| Prepaid expenses | 27,000 | 22,000 |
| Total current assets | $400,000 | $382,000 |
| Current liabilities | | |
| Accrued expenses payable | $ 15,000 | $ 5,000 |
| Accounts payable | 85,000 | 92,000 |
| Total current liabilities | $100,000 | $ 97,000 |

**Instructions**

Prepare the net cash provided by operating activities section of the company's statement of cash flows for the year ended December 31, 2020, using the indirect method.

*Prepare statement of cash flows—indirect method.*

**E17.6 (LO 2)** **Financial Statement** The following information is available for Stamos Corporation for the year ended December 31, 2020.

| | |
|---|---|
| Beginning cash balance | $ 45,000 |
| Accounts payable decrease | 3,700 |
| Depreciation expense | 162,000 |
| Accounts receivable increase | 8,200 |
| Inventory increase | 11,000 |
| Net income | 284,100 |
| Cash received for sale of land at book value | 35,000 |
| Cash dividends paid | 12,000 |
| Income taxes payable increase | 4,700 |
| Cash used to purchase building | 289,000 |
| Cash used to purchase treasury stock | 26,000 |
| Cash received from issuing bonds | 200,000 |

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### Instructions

Prepare a statement of cash flows using the indirect method.

**E17.7 (LO 2)** The following three accounts appear in the general ledger of Herrick Corp. during 2020.

*Prepare partial statement of cash flows—indirect method.*

**Equipment**

| Date | | Debit | Credit | Balance |
|---|---|---|---|---|
| Jan. 1 | Balance | | | 160,000 |
| July 31 | Purchase of equipment | 70,000 | | 230,000 |
| Sept. 2 | Cost of equipment constructed | 53,000 | | 283,000 |
| Nov. 10 | Cost of equipment sold | | 49,000 | 234,000 |

**Accumulated Depreciation—Equipment**

| Date | | Debit | Credit | Balance |
|---|---|---|---|---|
| Jan. 1 | Balance | | | 71,000 |
| Nov. 10 | Accumulated depreciation on equipment sold | 30,000 | | 41,000 |
| Dec. 31 | Depreciation for year | | 28,000 | 69,000 |

**Retained Earnings**

| Date | | Debit | Credit | Balance |
|---|---|---|---|---|
| Jan. 1 | Balance | | | 105,000 |
| Aug. 23 | Dividends (cash) | 14,000 | | 91,000 |
| Dec. 31 | Net income | | 77,000 | 168,000 |

### Instructions

From the postings in the accounts, indicate how the information is reported on a statement of cash flows using the indirect method. The loss on disposal of plant assets was $7,000. (*Hint:* Cost of equipment constructed is reported in the investing activities section as a decrease in cash of $53,000.)

**E17.8 (LO 2, 3)** **Financial Statement** Rojas Corporation's comparative balance sheets are presented below.

*Prepare statement of cash flows and compute free cash flow.*

**Rojas Corporation**
**Comparative Balance Sheets**
**December 31**

| | 2020 | 2019 |
|---|---|---|
| Cash | $ 14,300 | $ 10,700 |
| Accounts receivable | 21,200 | 23,400 |
| Land | 20,000 | 26,000 |
| Buildings | 70,000 | 70,000 |
| Accumulated depreciation—buildings | (15,000) | (10,000) |
| Total | $110,500 | $120,100 |
| | | |
| Accounts payable | $ 12,370 | $ 31,100 |
| Common stock | 75,000 | 69,000 |
| Retained earnings | 23,130 | 20,000 |
| Total | $110,500 | $120,100 |

Additional information:

1. Net income was $22,630. Dividends declared and paid were $19,500.
2. No noncash investing and financing activities occurred during 2020.
3. The land was sold for cash of $4,900.

### Instructions

**a.** Prepare a statement of cash flows for 2020 using the indirect method.

**b.** Compute free cash flow.

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*Prepare a statement of cash flows—indirect method.*

**E17.9 (LO 2)** **Financial Statement** Here are comparative balance sheets for Velo Company.

**Velo Company**
**Comparative Balance Sheets**
**December 31**

| **Assets** | **2020** | **2019** |
|---|---|---|
| Cash | $ 63,000 | $ 22,000 |
| Accounts receivable | 85,000 | 76,000 |
| Inventory | 170,000 | 189,000 |
| Land | 75,000 | 100,000 |
| Equipment | 270,000 | 200,000 |
| Accumulated depreciation—equipment | (66,000) | (32,000) |
| Total | $597,000 | $555,000 |
| **Liabilities and Stockholders' Equity** | | |
| Accounts payable | $ 39,000 | $ 47,000 |
| Bonds payable | 150,000 | 200,000 |
| Common stock ($1 par) | 216,000 | 174,000 |
| Retained earnings | 192,000 | 134,000 |
| Total | $597,000 | $555,000 |

Additional information:

1. Net income for 2020 was $93,000.
2. Cash dividends of $35,000 were declared and paid.
3. Bonds payable amounting to $50,000 were redeemed for cash $50,000.
4. Common stock was issued for $42,000 cash.
5. No equipment was sold during 2020, but land was sold at cost.

**Instructions**

Prepare a statement of cash flows for 2020 using the indirect method.

*Prepare statement of cash flows and compute free cash flow.*

**E17.10 (LO 2, 3)** **Financial Statement** Rodriquez Corporation's comparative balance sheets are presented below.

**Rodriquez Corporation**
**Comparative Balance Sheets**
**December 31**

| | **2020** | **2019** |
|---|---|---|
| Cash | $ 15,200 | $ 17,700 |
| Accounts receivable | 25,200 | 22,300 |
| Investments | 20,000 | 16,000 |
| Equipment | 60,000 | 70,000 |
| Accumulated depreciation—equipment | (14,000) | (10,000) |
| Total | $106,400 | $116,000 |
| Accounts payable | $ 14,600 | $ 11,100 |
| Bonds payable | 10,000 | 30,000 |
| Common stock | 50,000 | 45,000 |
| Retained earnings | 31,800 | 29,900 |
| Total | $106,400 | $116,000 |

Additional information:

1. Net income was $18,300. Dividends declared and paid were $16,400.
2. Equipment which cost $10,000 and had accumulated depreciation of $1,200 was sold for $3,300.
3. No noncash investing and financing activities occurred during 2020.

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### Instructions

**a.** Prepare a statement of cash flows for 2020 using the indirect method.

**b.** Compute free cash flow.

*Compute net cash provided by operating activities—direct method.*

***E17.11 (LO 4)** Macgregor Company completed its first year of operations on December 31, 2020. Its initial income statement showed that Macgregor had revenues of $192,000 and operating expenses of $78,000. Accounts receivable and accounts payable at year-end were $60,000 and $23,000, respectively. Assume that accounts payable related to operating expenses. Ignore income taxes.

### Instructions

Compute net cash provided by operating activities using the direct method.

*Compute cash payments—direct method.*

***E17.12 (LO 4)** Suppose a recent income statement for **McDonald's Corporation** shows cost of goods sold $4,852.7 million and operating expenses (including depreciation expense of $1,201 million) $10,671.5 million. The comparative balance sheet for the year shows that inventory increased $18.1 million, prepaid expenses increased $56.3 million, accounts payable (merchandise suppliers) increased $136.9 million, and accrued expenses payable increased $160.9 million.

### Instructions

Using the direct method, compute (a) cash payments to suppliers and (b) cash payments for operating expenses.

*Compute cash flow from operating activities—direct method.*

***E17.13 (LO 4)** The 2020 accounting records of Blocker Transport reveal these transactions and events.

| | | | |
|---|---|---|---|
| Payment of interest | $ 10,000 | Collection of accounts receivable | $182,000 |
| Cash sales | 48,000 | Payment of salaries and wages | 53,000 |
| Receipt of dividend revenue | 18,000 | Depreciation expense | 16,000 |
| Payment of income taxes | 12,000 | Proceeds from sale of vehicles | 12,000 |
| Net income | 38,000 | Purchase of equipment for cash | 22,000 |
| Payment of accounts payable | | Loss on sale of vehicles | 3,000 |
| for merchandise | 115,000 | Payment of dividends | 14,000 |
| Payment for land | 74,000 | Payment of operating expenses | 28,000 |

### Instructions

Prepare the cash flows from operating activities section using the direct method. (Not all of the items will be used.)

*Calculate cash flows—direct method.*

***E17.14 (LO 4)** The following information is taken from the 2020 general ledger of Swisher Company.

| | | |
|---|---|---|
| Rent | Rent expense | $ 48,000 |
| | Prepaid rent, January 1 | 5,900 |
| | Prepaid rent, December 31 | 9,000 |
| Salaries | Salaries and wages expense | $ 54,000 |
| | Salaries and wages payable, January 1 | 10,000 |
| | Salaries and wages payable, December 31 | 8,000 |
| Sales | Sales revenue | $175,000 |
| | Accounts receivable, January 1 | 16,000 |
| | Accounts receivable, December 31 | 7,000 |

### Instructions

In each case, compute the amount that should be reported in the operating activities section of the statement of cash flows under the direct method.

*Prepare a worksheet.*

***E17.15 (LO 5)** Comparative balance sheets for International Company are presented as follows.

**International Company**
**Comparative Balance Sheets**
**December 31**

| Assets | 2020 | 2019 |
|---|---|---|
| Cash | $ 73,000 | $ 22,000 |
| Accounts receivable | 85,000 | 76,000 |
| Inventory | 180,000 | 189,000 |
| Land | 75,000 | 100,000 |
| Equipment | 250,000 | 200,000 |
| Accumulated depreciation—equipment | (66,000) | (42,000) |
| Total | $597,000 | $545,000 |

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| Liabilities and Stockholders' Equity | 2020 | 2019 |
|---|---|---|
| Accounts payable | $ 34,000 | $ 47,000 |
| Bonds payable | 150,000 | 200,000 |
| Common stock ($1 par) | 214,000 | 164,000 |
| Retained earnings | 199,000 | 134,000 |
| Total | $597,000 | $545,000 |

Additional information:

1. Net income for 2020 was $135,000.
2. Cash dividends of $70,000 were declared and paid.
3. Bonds payable amounting to $50,000 were redeemed for cash $50,000.
4. Common stock was issued for $50,000 cash.
5. Depreciation expense was $24,000.
6. Sales revenue for the year was $978,000.
7. Land was sold at cost, and equipment was purchased for cash.

### Instructions

Prepare a worksheet for a statement of cash flows for 2020 using the indirect method. Enter the reconciling items directly on the worksheet, using letters to cross-reference each entry.

## Problems: Set A

*Distinguish among operating, investing, and financing activities.*

**P17.1A (LO 1)** You are provided with the following information regarding events that occurred at Moore Corporation during 2020 or changes in account balances as of December 31, 2020.

| | (1) Statement of Cash Flow Section Affected | (2) If Operating, Did It Increase or Decrease Reported Cash from Operating Activities? |
|---|---|---|
| **a.** Depreciation expense was $80,000. | | |
| **b.** Interest Payable account increased $5,000. | | |
| **c.** Received $26,000 from sale of plant assets. | | |
| **d.** Acquired land by issuing common stock to seller. | | |
| **e.** Paid $17,000 cash dividend to preferred stockholders. | | |
| **f.** Paid $4,000 cash dividend to common stockholders. | | |
| **g.** Accounts Receivable account decreased $10,000. | | |
| **h.** Inventory increased $2,000. | | |
| **i.** Received $100,000 from issuing bonds payable. | | |
| **j.** Acquired equipment for $16,000 cash. | | |

### Instructions

Moore prepares its statement of cash flows using the indirect approach. Complete the first column of the table, indicating whether each item affects the operating activities section (O) (that is, the item would be listed among the adjustments to net income to determine net cash provided by operating activities under the indirect approach), investing activities section (I), financing activities section (F), or is a noncash (NC) transaction reported in a separate schedule. For those items classified as operating activities (O), indicate whether the item is added (A) or subtracted (S) from net income to determine net cash provided by operating activities.

*Determine cash flow effects of changes in equity accounts.*

**P17.2A (LO 2)** The following account balances relate to the stockholders' equity accounts of Kerbs Corp. at year-end.

| | 2020 | 2019 |
|---|---|---|
| Common stock, 10,500 and 10,000 shares, respectively, for 2020 and 2019 | $170,000 | $140,000 |
| Preferred stock, 5,000 shares | 125,000 | 125,000 |
| Retained earnings | 300,000 | 250,000 |

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A small stock dividend was declared and issued in 2020. The result of the stock dividend was to decrease retained earnings by $10,500 and increase common stock by $10,500. Cash dividends were $15,000 in both 2020 and 2019. The common stock has no par or stated value.

### Instructions

**a.** What was the amount of net income reported by Kerbs Corp. in 2020?

**b.** Determine the amounts of any cash inflows or outflows related to the common stock and dividend accounts in 2020.

**c.** Indicate where each of the cash inflows or outflows identified in (b) would be classified on the statement of cash flows.

a. Net income $75,500

**P17.3A (LO 2)** **Financial Statement** The income statement of Whitlock Company is presented here.

*Prepare the operating activities section—indirect method.*

Excel

**Whitlock Company**
**Income Statement**
**For the Year Ended November 30, 2020**

| | | |
|---|---|---|
| Sales revenue | | $7,700,000 |
| Cost of goods sold | | |
| Beginning inventory | $1,900,000 | |
| Purchases | 4,400,000 | |
| Goods available for sale | 6,300,000 | |
| Ending inventory | 1,400,000 | |
| Total cost of goods sold | | 4,900,000 |
| Gross profit | | 2,800,000 |
| Operating expenses | | 1,150,000 |
| Net income | | $1,650,000 |

Additional information:

1. Accounts receivable increased $200,000 during the year, and inventory decreased $500,000.
2. Prepaid expenses increased $150,000 during the year.
3. Accounts payable to suppliers of merchandise decreased $340,000 during the year.
4. Accrued expenses payable decreased $100,000 during the year.
5. Operating expenses include depreciation expense of $70,000.

### Instructions

Prepare the operating activities section of the statement of cash flows for the year ended November 30, 2020, for Whitlock Company, using the indirect method.

Cash from operating activities $1,430,000

***P17.4A (LO 4)** **Financial Statement** Data for Whitlock Company are presented in P17.3A.

*Prepare the operating activities section—direct method.*

### Instructions

Prepare the operating activities section of the statement of cash flows using the direct method.

Cash from operating activities $1,430,000

**P17.5A (LO 2)** **Financial Statement** Zumbrunn Company's income statement contained the following condensed information.

*Prepare the operating activities section—indirect method.*

Excel

**Zumbrunn Company**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Service revenue | | $970,000 |
| Operating expenses, excluding depreciation | $624,000 | |
| Depreciation expense | 60,000 | |
| Loss on disposal of plant assets | 16,000 | 700,000 |
| Income before income taxes | | 270,000 |
| Income tax expense | | 40,000 |
| Net income | | $230,000 |

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Zumbrunn's balance sheets contained the comparative data at December 31, shown below.

| | 2020 | 2019 |
|---|---|---|
| Accounts receivable | $75,000 | $65,000 |
| Accounts payable | 46,000 | 28,000 |
| Income taxes payable | 11,000 | 7,000 |

Accounts payable pertain to operating expenses.

Cash from operating activities $318,000

**Instructions**

Prepare the operating activities section of the statement of cash flows using the indirect method.

*Prepare the operating activities section—direct method.*

Excel

*P17.6A (LO 4) Financial Statement Data for Zumbrunn Company are presented in P17.5A.

**Instructions**

Prepare the operating activities section of the statement of cash flows using the direct method.

Cash from operating activities $318,000

*Prepare a statement of cash flows—indirect method, and compute free cash flow.*

Excel

P17.7A (LO 2, 3) Financial Statement The following are the financial statements of Nosker Company.

**Nosker Company**
**Comparative Balance Sheets**
**December 31**

| Assets | 2020 | 2019 |
|---|---|---|
| Cash | $ 38,000 | $ 20,000 |
| Accounts receivable | 30,000 | 14,000 |
| Inventory | 27,000 | 20,000 |
| Equipment | 60,000 | 78,000 |
| Accumulated depreciation—equipment | (29,000) | (24,000) |
| Total | $126,000 | $108,000 |
| **Liabilities and Stockholders' Equity** | | |
| Accounts payable | $ 24,000 | $ 15,000 |
| Income taxes payable | 7,000 | 8,000 |
| Bonds payable | 27,000 | 33,000 |
| Common stock | 18,000 | 14,000 |
| Retained earnings | 50,000 | 38,000 |
| Total | $126,000 | $108,000 |

**Nosker Company**
**Income Statement**
**For the Year Ended December 31, 2020**

| | |
|---|---|
| Sales revenue | $242,000 |
| Cost of goods sold | 175,000 |
| Gross profit | 67,000 |
| Operating expenses | 24,000 |
| Income from operations | 43,000 |
| Interest expense | 3,000 |
| Income before income taxes | 40,000 |
| Income tax expense | 8,000 |
| Net income | $ 32,000 |

Additional data:

1. Dividends declared and paid were $20,000.
2. During the year, equipment was sold for $8,500 cash. This equipment cost $18,000 originally and had a book value of $8,500 at the time of sale.
3. All depreciation expense, $14,500, is in the operating expenses.
4. All sales and purchases are on account.

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**Instructions**

**a.** Prepare a statement of cash flows using the indirect method.

**b.** Compute free cash flow.

a. Cash from operating activities $31,500

*P17.8A (LO 3, 4) **Financial Statement** Data for Nosker Company are presented in P17.7A. Further analysis reveals the following.

*Prepare a statement of cash flows—direct method, and compute free cash flow.*

1. Accounts payable pertain to merchandise suppliers.
2. All operating expenses except for depreciation were paid in cash.

Excel

**Instructions**

**a.** Prepare a statement of cash flows for Nosker Company using the direct method.

**b.** Compute free cash flow.

a. Cash from operating activities $31,500

P17.9A (LO 2) **Financial Statement** Condensed financial data of Cheng Inc. follow.

*Prepare a statement of cash flows—indirect method.*

**Cheng Inc.**
**Comparative Balance Sheets**
**December 31**

| Assets | 2020 | 2019 |
|---|---|---|
| Cash | $ 80,800 | $ 48,400 |
| Accounts receivable | 92,800 | 33,000 |
| Inventory | 117,500 | 102,850 |
| Prepaid expenses | 28,400 | 26,000 |
| Investments | 143,000 | 114,000 |
| Equipment | 270,000 | 242,500 |
| Accumulated depreciation—equipment | (50,000) | (52,000) |
| Total | $682,500 | $514,750 |
| **Liabilities and Stockholders' Equity** | | |
| Accounts payable | $112,000 | $ 67,300 |
| Accrued expenses payable | 16,500 | 17,000 |
| Bonds payable | 110,000 | 150,000 |
| Common stock | 220,000 | 175,000 |
| Retained earnings | 224,000 | 105,450 |
| Total | $682,500 | $514,750 |

**Cheng Inc.**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Sales revenue | | $392,780 |
| Less: | | |
| Cost of goods sold | $135,460 | |
| Operating expenses, excluding depreciation | 12,410 | |
| Depreciation expense | 46,500 | |
| Income tax expense | 27,280 | |
| Interest expense | 4,730 | |
| Loss on disposal of plant assets | 7,500 | 233,880 |
| Net income | | $158,900 |

Additional information:

1. New equipment costing $85,000 was purchased for cash during the year.
2. Old equipment having an original cost of $57,500 was sold for $1,500 cash.
3. Bonds matured and were paid off at face value for cash.
4. A cash dividend of $40,350 was declared and paid during the year.

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Cash from operating activities $180,250

**Instructions**

Prepare a statement of cash flows using the indirect method.

*Prepare a statement of cash flows—direct method.*

***P17.10A (LO 4)** **Financial Statement** Data for Cheng Inc. are presented in P17.9A. Further analysis reveals that accounts payable pertain to merchandise creditors.

Cash from operating activities $180,250

**Instructions**

Prepare a statement of cash flows for Cheng Inc. using the direct method.

*Prepare a statement of cash flows—indirect method.*

**P17.11A (LO 2)** **Financial Statement** The comparative balance sheets for Rothlisberger Company as of December 31 are presented below.

**Rothlisberger Company**
**Comparative Balance Sheets**
**December 31**

| Assets | 2020 | 2019 |
|---|---|---|
| Cash | $ 81,000 | $ 45,000 |
| Accounts receivable | 41,000 | 62,000 |
| Inventory | 151,450 | 142,000 |
| Prepaid expenses | 15,280 | 21,000 |
| Land | 105,000 | 130,000 |
| Buildings | 200,000 | 200,000 |
| Accumulated depreciation—buildings | (60,000) | (40,000) |
| Equipment | 221,000 | 155,000 |
| Accumulated depreciation—equipment | (45,000) | (35,000) |
| Total | $709,730 | $680,000 |
| **Liabilities and Stockholders' Equity** | | |
| Accounts payable | $ 47,730 | $ 40,000 |
| Bonds payable | 260,000 | 300,000 |
| Common stock, $1 par | 200,000 | 160,000 |
| Retained earnings | 202,000 | 180,000 |
| Total | $709,730 | $680,000 |

Additional information:

1. Operating expenses include depreciation expense of $42,000 and charges from prepaid expenses of $5,720.
2. Land was sold for cash at book value.
3. Cash dividends of $20,000 were paid.
4. Net income for 2020 was $42,000.
5. Equipment was purchased for $88,000 cash. In addition, equipment costing $22,000 with a book value of $10,000 was sold for $6,000 cash.
6. Bonds were converted at face value by issuing 40,000 shares of $1 par value common stock.

Cash from operating activities $113,000

**Instructions**

Prepare a statement of cash flows for the year ended December 31, 2020, using the indirect method.

*Prepare a worksheet—indirect method.*

Excel

***P17.12A (LO 5)** Condensed financial data of Oakley Company appear below.

**Oakley Company**
**Comparative Balance Sheets**
**December 31**

| Assets | 2020 | 2019 |
|---|---|---|
| Cash | $ 82,700 | $ 47,250 |
| Accounts receivable | 90,800 | 57,000 |
| Inventory | 126,900 | 102,650 |
| Investments | 84,500 | 87,000 |
| Equipment | 255,000 | 205,000 |
| Accumulated depreciation—equipment | (49,500) | (40,000) |
| | $590,400 | $458,900 |

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| Liabilities and Stockholders' Equity | 2020 | 2019 |
|---|---|---|
| Accounts payable | $ 57,700 | $ 48,280 |
| Accrued expenses payable | 12,100 | 18,830 |
| Bonds payable | 100,000 | 70,000 |
| Common stock | 250,000 | 200,000 |
| Retained earnings | 170,600 | 121,790 |
| | $590,400 | $458,900 |

**Oakley Company**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Sales revenue | | $297,500 |
| Gain on disposal of plant assets | | 8,750 |
| | | 306,250 |
| Less: | | |
| Cost of goods sold | $99,460 | |
| Operating expenses (excluding depreciation expense) | 14,670 | |
| Depreciation expense | 49,700 | |
| Income tax expense | 7,270 | |
| Interest expense | 2,940 | 174,040 |
| Net income | | $132,210 |

Additional information:

1. Equipment costing $97,000 was purchased for cash during the year.
2. Investments were sold at cost.
3. Equipment costing $47,000 was sold for $15,550, resulting in gain of $8,750.
4. A cash dividend of $83,400 was declared and paid during the year.

### Instructions

Prepare a worksheet for the statement of cash flows using the indirect method. Enter the reconciling items directly in the worksheet columns, using letters to cross-reference each entry.

Reconciling items total $610,210

## Continuing Case

### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations problem from Chapters 1 through 16.)

**CC17** Natalie has prepared the balance sheet and income statement of Cookie & Coffee Creations Inc. and would like you to prepare the statement of cash flows.

*Go to* **WileyPLUS** *for complete case details and instructions.*

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## Ethics Case

**EC17** Wesley Corp. is a medium-sized wholesaler of automotive parts. It has 10 stockholders who have been paid a total of $1 million in cash dividends for 8 consecutive years. The board's policy requires that, for this dividend to be declared, net cash provided by operating activities as reported in Wesley's current year's statement of cash flows must exceed $1 million. President and CEO Samuel Gunkle's job is secure so long as he produces annual operating cash flows to support the usual dividend.

At the end of the current year, controller Gerald Rondelli presents president Samuel Gunkle with some disappointing news: The net cash provided by operating activities is calculated by the indirect method to be only $970,000. The president says to Gerald, "We must get that amount above $1 million. Isn't there some way to increase operating cash flow by another $30,000?" Gerald answers, "These

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figures were prepared by my assistant. I'll go back to my office and see what I can do." The president replies, "I know you won't let me down, Gerald."

Upon close scrutiny of the statement of cash flows, Gerald concludes that he can get the operating cash flows above $1 million by reclassifying a $60,000, 2-year note payable listed in the financing activities section as "Proceeds from bank loan—$60,000." He will report the note instead as "Increase in payables—$60,000" and treat it as an adjustment of net income in the operating activities section. He returns to the president, saying, "You can tell the board to declare their usual dividend. Our net cash flow provided by operating activities is $1,030,000." "Good man, Gerald! I knew I could count on you," exults the president.

**Instructions**

**a.** Who are the stakeholders in this situation?

**b.** Was there anything unethical about the president's actions? Was there anything unethical about the controller's actions?

**c.** Are the board members or anyone else likely to discover the misclassification?

## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT17.1** The financial statements of **Apple Inc.** are presented in Appendix A. The complete annual report, including the notes to the financial statements, is available at the company's website.

**Instructions**

**a.** What was the amount of net cash provided by operating activities for the year ended September 26, 2015? For the year ended September 27, 2014?

**b.** What was the amount of increase or decrease in cash and cash equivalents for the year ended September 26, 2015? For the year ended September 27, 2014?

**c.** Which method of computing net cash provided by operating activities does Apple use?

**d.** From your analysis of the 2015 statement of cash flows, did the change in accounts receivable increase or decrease cash? Did the change in inventories increase or decrease cash? Did the change in accounts payable increase or decrease cash?

**e.** What was the net outflow or inflow of cash from investing activities for the year ended September 26, 2015?

**f.** What was the amount of income taxes paid in the year ended September 26, 2015?

### Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT17.2** **PepsiCo**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

**Instructions**

**a.** Based on the information contained in these financial statements, compute free cash flow for each company.

**b.** What conclusions concerning the management of cash can be drawn from these data?

### Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT17.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports for Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

**Instructions**

**a.** Based on the information contained in these financial statements, compute free cash flow for each company.

**b.** What conclusions concerning the management of cash can be drawn from these data?

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## Decision-Making Across the Organization

**CT17.4** Tom Epps and Mary Jones are examining the following statement of cash flows for Guthrie Company for the year ended January 31, 2020.

**Statement of Cash Flows**
**For the Year Ended January 31, 2020**

| | |
|---|---|
| Sources of cash | |
| From sales of merchandise | $380,000 |
| From sale of capital stock | 420,000 |
| From sale of investment (purchased below) | 80,000 |
| From depreciation | 55,000 |
| From issuance of note for truck | 20,000 |
| From interest on investments | 6,000 |
| Total sources of cash | 961,000 |
| Uses of cash | |
| For purchase of fixtures and equipment | 330,000 |
| For merchandise purchased for resale | 258,000 |
| For operating expenses (including depreciation) | 160,000 |
| For purchase of investment | 75,000 |
| For purchase of truck by issuance of note | 20,000 |
| For purchase of treasury stock | 10,000 |
| For interest on note payable | 3,000 |
| Total uses of cash | 856,000 |
| Net increase in cash | $105,000 |

Tom claims that Guthrie's statement of cash flows is an excellent portrayal of a superb first year with cash increasing $105,000. Mary replies that it was not a superb first year. Rather, she says, the year was an operating failure, that the statement is presented incorrectly, and that $105,000 is not the actual increase in cash. The cash balance at the beginning of the year was $140,000.

### Instructions

With the class divided into groups, answer the following.

**a.** Using the data provided, prepare a statement of cash flows in proper form using the indirect method. The only noncash items in the income statement are depreciation and the gain from the sale of the investment. Assume that all merchandise purchased has been sold.

**b.** With whom do you agree, Tom or Mary? Explain your position.

## Real-World Focus

**CT17.5** Purpose: Learn about the **Securities and Exchange Commission (SEC)**.

### Instructions

Go to the SEC website, choose **About the SEC**, and then answer the following questions.

**a.** How many enforcement actions does the SEC take each year against securities law violators? What are typical infractions?

**b.** After the Depression, Congress passed the Securities Acts of 1933 and 1934 to improve investor confidence in the markets. What two "common sense" notions are these laws based on?

**c.** Who was the President of the United States at the time of the creation of the SEC? Who was the first SEC Chairperson?

**CT17.6** Purpose: Use the Internet to view SEC filings.

### Instructions

Go to the **Yahoo-Edgar Online** website, find the SEC filings for the company of your choice, and then answer the following questions.

**a.** What company did you select?

**b.** Which filing is the most recent? What is the date?

**c.** What other recent SEC filings are available for your viewing?

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### Communication Activity

**CT17.7** Will Hardin, the owner-president of Computer Services Company, is unfamiliar with the statement of cash flows that you, as his accountant, prepared. He asks for further explanation.

#### Instructions

Write him a brief memo explaining the form and content of the statement of cash flows as shown in Illustration 17.13.

### All About You

**CT17.8** In this chapter, you learned that companies prepare a statement of cash flows in order to keep track of their sources and uses of cash and to help them plan for their future cash needs. Planning for your own short- and long-term cash needs is every bit as important as it is for a company.

#### Instructions

Read the online article "Financial Uh-Oh? No Problem" and answer the following questions. To access this article, it may be necessary to register at no cost.

**a.** Describe the three factors that determine how much money you should set aside for short-term needs.

**b.** How many months of living expenses does the article suggest to set aside?

**c.** Estimate how much you should set aside based upon your current situation. Are you closer to Cliff's scenario or to Prudence's?

### FASB Codification Activity

**CT17.9** If your school has a subscription to the FASB Codification, log in and prepare responses to the following. Use the Master Glossary to determine the proper definitions.

**a.** What are cash equivalents?

**b.** What are financing activities?

**c.** What are investing activities?

**d.** What are operating activities?

**e.** What is the primary objective for the statement of cash flow? Is working capital the basis for meeting this objective?

**f.** Do companies need to disclose information about investing and financing activities that do not affect cash receipts or cash payments? If so, how should such information be disclosed?

## A Look at IFRS

**LEARNING OBJECTIVE 7**

Compare the procedures for the statement of cash flows under GAAP and IFRS.

As in GAAP, the statement of cash flows is a required statement for IFRS. In addition, the content and presentation of an IFRS statement of cash flows is similar to the one used for GAAP. However, the disclosure requirements related to the statement of cash flows are more extensive under GAAP. *IAS 7* ("Cash Flow Statements") provides the overall IFRS requirements for cash flow information.

### Key Points

Following are the key similarities and differences between GAAP and IFRS as related to the statement of cash flows.

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### Similarities

- Companies preparing financial statements under IFRS must also prepare a statement of cash flows as an integral part of the financial statements.
- Both IFRS and GAAP require that the statement of cash flows should have three major sections—operating, investing, and financing activities—along with changes in cash and cash equivalents.
- Similar to GAAP, the statement of cash flows can be prepared using either the indirect or direct method under IFRS. In both U.S. and international settings, companies choose for the most part to use the indirect method for reporting net cash flows from operating activities.
- The definition of cash equivalents used in IFRS is similar to that used in GAAP. A major difference is that in certain situations, bank overdrafts are considered part of cash and cash equivalents under IFRS (which is not the case in GAAP). Under GAAP, bank overdrafts are classified as financing activities in the statement of cash flows and are reported as liabilities on the balance sheet.

### Differences

- IFRS requires that noncash investing and financing activities be excluded from the statement of cash flows. Instead, these noncash activities should be reported elsewhere. This requirement is interpreted to mean that noncash investing and financing activities should be disclosed in the notes to the financial statements instead of in the financial statements. Under GAAP, companies may present this information on the face of the statement of cash flows.
- One area where there can be substantial differences between IFRS and GAAP relates to the classification of interest, dividends, and taxes. The following table indicates the differences between the two approaches.

| Item | IFRS | GAAP |
|---|---|---|
| Interest paid | Operating or financing | Operating |
| Interest received | Operating or investing | Operating |
| Dividends paid | Operating or financing | Financing |
| Dividends received | Operating or investing | Operating |
| Taxes paid | Operating—unless specific identification with financing or investing activity | Operating |

- Under IFRS, some companies present the operating section in a single line item, with a full reconciliation provided in the notes to the financial statements. This presentation is not seen under GAAP.

### Looking to the Future

Presently, the FASB and the IASB are involved in a joint project on the presentation and organization of information in the financial statements. One interesting approach, revealed in a published proposal from that project, is that in the future the income statement and balance sheet would adopt headings similar to those of the statement of cash flows. That is, the income statement and balance sheet would be broken into operating, investing, and financing sections.

## IFRS Practice

### IFRS Self-Test Questions

1. Under IFRS, interest paid can be reported as:
   **a.** only a financing activity.
   **b.** a financing activity or an investing activity.
   **c.** a financing activity or an operating activity.
   **d.** only an operating activity.
2. IFRS requires that noncash items:
   **a.** be reported in the section to which they relate, that is, a noncash investing activity would be reported in the investing section.
   **b.** be disclosed in the notes to the financial statements.
   **c.** do not need to be reported.
   **d.** be treated in a fashion similar to cash equivalents.
3. In the future, it appears likely that:
   **a.** the income statement and balance sheet will have headings of operating, investing, and financing, much like the statement of cash flows.
   **b.** cash and cash equivalents will be combined in a single line item.
   **c.** the IASB will not allow companies to use the direct approach to the statement of cash flows.
   **d.** None of the above.

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4. Under IFRS:
   a. taxes are always treated as an operating activity.
   b. the income statement uses the headings operating, investing, and financing.
   c. dividends received can be either an operating or investing activity.
   d. dividends paid can be either an operating or investing activity.

5. Which of the following is **correct**?
   a. Under IFRS, the statement of cash flows is optional.
   b. IFRS requires use of the direct approach in preparing the statement of cash flows.
   c. The majority of companies following GAAP and the majority following IFRS employ the indirect approach to the statement of cash flows.
   d. Under IFRS, companies offset financing activities against investing activities.

## IFRS Exercises

**IFRS17.1** Discuss the differences that exist in the treatment of bank overdrafts under GAAP and IFRS.

**IFRS17.2** Describe the treatment of each of the following items under IFRS versus GAAP.

a. Interest paid.
b. Interest received.
c. Dividends paid.
d. Dividends received.

## International Financial Reporting Problem: Louis Vuitton

**IFRS17.3** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

### Instructions

Use the company's annual report to answer the following questions.

a. In which section (operating, investing, or financing) does Louis Vuitton report interest paid (finance costs)?
b. In which section (operating, investing, or financing) does Louis Vuitton report dividends received?
c. If Louis Vuitton reported under GAAP rather than IFRS, how would its treatment of bank overdrafts differ?

### Answers to IFRS Self-Test Questions

**1.** c **2.** b **3.** a **4.** c **5.** c

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# Financial Analysis: The Big Picture

## Chapter Preview

We can all learn an important lesson from Warren Buffett: Study companies carefully if you wish to invest. Do not get caught up in fads but instead find companies that are financially healthy. Using some of the basic decision tools presented in this textbook, you can perform a rudimentary analysis on any company and draw basic conclusions about its financial health. Although it would not be wise for you to bet your life savings on a company's stock relying solely on your current level of knowledge, we strongly encourage you to practice your new skills wherever possible. Only with practice will you improve your ability to interpret financial numbers.

Before we unleash you on the world of high finance, we present a few more important concepts and techniques as well as one more comprehensive review of corporate financial statements. We use all of the decision tools presented in this textbook to analyze a single company, with comparisons to a competitor and industry averages.

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# Feature Story

## It Pays to Be Patient

A recent issue of *Forbes* magazine listed Warren Buffett as the second richest person in the world. His estimated wealth was $69 billion, give or take a few million. How much is $69 billion? If you invested $69 billion in an investment earning just 4%, you could spend $7.6 million per day—every day—forever.

So, how does Buffett spend his money? Basically, he doesn't! He still lives in the same house that he purchased in Omaha, Nebraska, in 1958 for $31,500. He still drives his own car (a Cadillac DTS). And, in case you were thinking that his kids are riding the road to Easy Street, think again. Buffett has committed to donate virtually all of his money to charity before he dies.

How did Buffett amass this wealth? Through careful investing. Buffett epitomizes a "value investor." He applies the basic techniques he learned in the 1950s from the great value investor Benjamin Graham. He looks for companies that have good long-term potential but are currently underpriced. He invests in companies that have low exposure to debt and that reinvest their earnings for future growth. He does not get caught up in fads or the latest trends.

For example, Buffett sat out on the dot-com mania in the 1990s. When other investors put lots of money into fledgling high-tech firms, Buffett didn't bite because he did not find dot-com companies that met his criteria. He didn't get to enjoy the stock price boom on the way up, but on the other hand, he didn't have to ride the price back down to Earth. When the dot-com bubble burst, everyone else was suffering from investment shock. Buffett swooped in and scooped up deals on companies that he had been following for years.

In 2012, the stock market had again reached near record highs. Buffett's returns had been significantly lagging the market. Only 26% of his investments at that time were in stock, and he was sitting on $38 billion in cash. One commentator noted that "if the past is any guide, just when Buffett seems to look most like a loser, the party is about to end."

If you think you want to follow Buffett's example and transform your humble nest egg into a mountain of cash, be warned. His techniques have been widely circulated and emulated, but never practiced with the same degree of success. You should probably start by honing your financial analysis skills. A good way for you to begin your career as a successful investor is to master the fundamentals of financial analysis discussed in this chapter.

**Source:** Jason Zweig, "Buffett Is Out of Step," *Wall Street Journal* (May 7, 2012).

# Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Apply the concepts of sustainable income and quality of earnings. | • Sustainable income<br>• Quality of earnings | **DO IT! 1** Unusual Items |
| **LO 2** Apply horizontal analysis and vertical analysis. | • Horizontal analysis<br>• Vertical analysis | **DO IT! 2** Horizontal Analysis |
| **LO 3** Analyze a company's performance using ratio analysis. | • Liquidity ratios<br>• Solvency ratios<br>• Profitability ratios<br>• Comprehensive example | **DO IT! 3** Ratio Analysis |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with Orion for additional tutorials and practice opportunities.**

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# Sustainable Income and Quality of Earnings

**LEARNING OBJECTIVE 1**

Apply the concepts of sustainable income and quality of earnings.

## Sustainable Income

The value of a company like **Google** is a function of the amount, timing, and uncertainty of its future cash flows. Google's current and past income statements are particularly useful in helping analysts predict these future cash flows. In using this approach, analysts must make sure that Google's past income numbers reflect its **sustainable income**, that is, do not include unusual (out-of-the-ordinary) revenues, expenses, gains, and losses. **Sustainable income** is, therefore, the most likely level of income to be obtained by a company in the future. Sustainable income differs from actual net income by the amount of unusual revenues, expenses, gains, and losses included in the current year's income. Analysts are interested in sustainable income because it helps them derive an estimate of future earnings without the "noise" of unusual items.

Fortunately, an income statement provides information on sustainable income by separating operating transactions from nonoperating transactions. This statement also highlights intermediate components of income such as income from operations, income before income taxes, and income from continuing operations. In addition, information on unusual items such as gains or losses on discontinued items and components of other comprehensive income are disclosed.

**Illustration 18.1** presents a statement of comprehensive income for Cruz Company for the year 2020. A statement of comprehensive income includes not only net income but a broader measure of income called comprehensive income. The two major unusual items in this statement are discontinued operations and other comprehensive income (highlighted in red). When estimating future cash flows, analysts must consider the implications of each of these components.

**ILLUSTRATION 18.1**
**Statement of comprehensive income**

**Cruz Company**
**Statement of Comprehensive Income**
**For the Year Ended 2020**

| | |
|---|---|
| Sales revenue | $900,000 |
| Cost of goods sold | 650,000 |
| Gross profit | 250,000 |
| Operating expenses | 100,000 |
| Income from operations | 150,000 |
| Other revenues (expenses) and gains (losses) | 20,000 |
| Income before income taxes | 170,000 |
| Income tax expense | 24,000 |
| Income from continuing operations | 146,000 |
| **Discontinued operations (net of tax)** | **30,000** |
| Net income | 176,000 |
| **Other comprehensive income items (net of tax)** | **10,000** |
| Comprehensive income | $186,000 |

In looking at Illustration 18.1, note that Cruz Company's two major types of unusual items, discontinued operations and other comprehensive income, are reported net of tax. That is, Cruz first calculates income tax expense before income from continuing operations. Then,

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it calculates income tax expense related to the discontinued operations and other comprehensive income, and displays each item separately, net of tax. The general concept is, "Let the tax follow the income or loss." We discuss discontinued operations and other comprehensive income in more detail next.

## Discontinued Operations

**Discontinued operations** refers to the disposal of a **significant component** of a business, such as the elimination of a major class of customers or an entire activity. For example, to downsize its operations, **General Dynamics Corp.** sold its missile business to **Hughes Aircraft Co.** for $450 million. In the net income section of its statement of comprehensive income, General Dynamics reported the sale in a separate section entitled "Discontinued operations."

Following the disposal of a significant component, the company should report on its statement both income from continuing operations and income (or loss) from discontinued operations. **The income (loss) from discontinued operations consists of two parts: the income (loss) from operations** and **the gain (loss) on disposal of the component.**

To illustrate, assume that during 2020 Acro Energy Inc. has income before income taxes of $800,000. During 2020, Acro discontinued and sold its unprofitable chemical division. The loss in 2020 from chemical operations (net of $60,000 taxes) was $140,000. The loss on disposal of the chemical division (net of $30,000 taxes) was $70,000. Assuming a 30% tax rate on income, **Illustration 18.2** shows Acro's statement of comprehensive income presentation (see **Helpful Hint**).

**ILLUSTRATION 18.2**
**Statement presentation of discontinued operations**

**Acro Energy Inc.**
**Statement of Comprehensive Income (partial)**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Income before income taxes | | $800,000 |
| Income tax expense | | 240,000 |
| Income from continuing operations | | 560,000 |
| **Discontinued operations** | | |
| **Loss from operation of chemical division, net of $60,000 income tax savings** | **$140,000** | |
| **Loss from disposal of chemical division, net of $30,000 income tax savings** | **70,000** | **210,000** |
| Net income | | $350,000 |

**HELPFUL HINT**
**Observe the dual disclosures: (1) the results of operation of the discontinued division must be separated from the results of continuing operations, and (2) the company must also report the disposal of the division.**

Note that the statement uses the caption "Income from continuing operations" and adds a new section "Discontinued operations." **The new section reports both the operating loss and the loss on disposal net of applicable income taxes.** This presentation clearly indicates the separate effects of continuing operations and discontinued operations on net income.

## Investor Insight

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### What Does "Non-Recurring" Really Mean?

Many companies incur restructuring charges as they attempt to reduce costs. They often label these items in the income statement as "non-recurring" charges, to suggest that they are isolated events, unlikely to occur in future periods. The question for analysts is, are these costs really one-time, "non-recurring events" or do they reflect problems that the company will be facing for many periods in the future? If they are one-time events, then they can be largely ignored when trying to predict future earnings.

But, some companies report "one-time" restructuring charges over and over again. For example, **Procter & Gamble** reported a restructuring charge in 12 consecutive quarters, and **Motorola** had "special" charges in 14 consecutive quarters. On the other hand, other companies have a restructuring charge only once in a 5- or 10-year period. There appears to be no substitute for careful analysis of the numbers that comprise net income.

**If a company takes a large restructuring charge, what is the effect on the company's current income statement versus future ones? (Go to WileyPLUS for this answer and additional questions.)**

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## Comprehensive Income

Most revenues, expenses, gains, and losses are included in net income. However, as discussed in earlier chapters, certain gains and losses that bypass net income are reported as part of a more inclusive earnings measure called comprehensive income. **Comprehensive income** is the sum of net income and other comprehensive income items.[1]

**Illustration of Comprehensive Income.** Accounting standards require that companies adjust most investments in stocks and bonds up or down to their market price at the end of each accounting period. For example, assume that during 2020, its first year of operations, Stassi Corporation purchased **IBM** bonds for $10,500 as an investment, which it intends to sell sometime in the future. At the end of 2020, Stassi was still holding the investment, but the bonds' market price was now $8,000. In this case, Stassi is required to reduce the recorded value of its IBM investment by $2,500. The $2,500 difference is an unrealized loss.

Should Stassi include this $2,500 unrealized loss in net income? It depends on whether Stassi classifies the IBM bonds as a trading security or an available-for-sale security. A **trading security** is bought and held primarily for sale in the near term to generate income on short-term price differences. Companies report unrealized losses on trading securities in the "Other expenses and losses" section of the income statement. The rationale: It is likely that the company will realize the unrealized loss (or an unrealized gain), so the company should report the loss (gain) as part of net income.

If Stassi did not purchase the investment for trading purposes, it is classified as available-for-sale. **Available-for-sale securities** are held with the intent of selling them sometime in the future. Companies do not include unrealized gains or losses on available-for-sale securities in net income. Instead, they report them as part of "Other comprehensive income." Other comprehensive income is not included in net income.

**Format.** One format for reporting other comprehensive income is to report a separate comprehensive income statement. For example, assuming that Stassi Corporation has a net income of $300,000 and a 20% tax rate, the unrealized loss would be reported below net income, net of tax, as shown in **Illustration 18.3**.

**Stassi Corporation**
**Comprehensive Income Statement**
**For the Year Ended December 31, 2020**

| | |
|---|---|
| Net income | $300,000 |
| Other comprehensive income | |
| Unrealized loss on available-for-sale securities, net of $500 tax savings | 2,000 |
| Comprehensive income | $298,000 |

**ILLUSTRATION 18.3**
**Lower portion of combined statement of income and comprehensive income**

Companies report the cumulative amount of other comprehensive income from all years as a separate component of stockholders' equity. To illustrate, assume Stassi has common stock of $3,000,000, retained earnings of $300,000, and accumulated other comprehensive loss of $2,000. (To simplify, we are assuming that this is Stassi's first year of operations. Since it has only operated for one year, the cumulative amount of other comprehensive income is this year's loss of $2,000.) **Illustration 18.4** shows the balance sheet presentation of the accumulated other comprehensive loss.

[1]The FASB's Conceptual Framework describes comprehensive income as including all changes in stockholders' equity during a period except those changes resulting from investments by stockholders and distributions to stockholders.

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**ILLUSTRATION 18.4**
**Unrealized loss in stockholders' equity section**

| Stassi Corporation<br>Balance Sheet (partial) | |
|---|---|
| Stockholders' equity | |
| Common stock | $3,000,000 |
| Retained earnings | 300,000 |
| Total paid-in capital and retained earnings | 3,300,000 |
| **Accumulated other comprehensive loss** | **(2,000)** |
| Total stockholders' equity | $3,298,000 |

Note that the presentation of the accumulated other comprehensive loss is similar to the presentation of the cost of treasury stock in the stockholders' equity section. (An unrealized gain would be added in this section of the balance sheet.)

**Complete Statement of Comprehensive Income.** As seen in Illustration 18.1, as an alternative to preparing a separate comprehensive income statement, many companies report net income and other comprehensive income in a combined statement of comprehensive income. (*For your homework in this chapter, use this combined format.*) The statement of comprehensive income for Pace Corporation in **Illustration 18.5** presents the types of items found on this statement, such as net sales, cost of goods sold, operating expenses, and income taxes. In addition, it shows how companies report discontinued operations and other comprehensive income (highlighted in red).

**ILLUSTRATION 18.5**
**Complete statement of comprehensive income**

| Pace Corporation<br>Statement of Comprehensive Income<br>For the Year Ended December 31, 2020 | | |
|---|---|---|
| Net sales | | $440,000 |
| Cost of goods sold | | 260,000 |
| Gross profit | | 180,000 |
| Operating expenses | | 110,000 |
| Income from operations | | 70,000 |
| Other revenues and gains | | 5,600 |
| Other expenses and losses | | 9,600 |
| Income before income taxes | | 66,000 |
| Income tax expense ($66,000 × 30%) | | 19,800 |
| Income from continuing operations | | 46,200 |
| **Discontinued operations** | | |
| **Loss from operation of plastics division, net of income tax savings $18,000 ($60,000 × 30%)** | **$42,000** | |
| **Gain on disposal of plastics division, net of $15,000 income taxes ($50,000 × 30%)** | **35,000** | **7,000** |
| **Net income** | | **39,200** |
| **Other comprehensive income** | | |
| **Unrealized gain on available-for-sale securities, net of income taxes ($15,000 × 30%)** | | **10,500** |
| **Comprehensive income** | | **$ 49,700** |

## Changes in Accounting Principle

For ease of comparison, users of financial statements expect companies to prepare their statements on a basis **consistent** with the preceding period. A **change in accounting principle** occurs when the principle used in the current year is different from the one used in the preceding

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year. An example is a change in inventory costing methods (such as FIFO to average-cost). Accounting rules permit a change when management can show that the new principle is preferable to the old principle.

Companies report most changes in accounting principle retroactively.[2] That is, they report both the current period and previous periods using the new principle. As a result, the same principle applies in all periods. This treatment improves the ability to compare results across years.

## Investor Insight — United Parcel Service (UPS)

Larry MacDougal/AP/Wide World Photos

### More Frequent Ups and Downs

In the past, U.S. companies used a method to account for their pension plans that smoothed out the gains and losses on their pension portfolios by spreading gains and losses over multiple years. Many felt that this approach was beneficial because it reduced the volatility of reported net income. However, recently some companies have opted to adopt a method that comes closer to recognizing gains and losses in the period in which they occur. Some of the companies that have adopted this approach are **United Parcel Service (UPS)**, **Honeywell International**, **IBM**, **AT&T**, and **Verizon Communications**. The CFO at UPS said he favored the new approach because "events that occurred in prior years will no longer distort current-year results. It will result in better transparency by eliminating the noise of past plan performance." When UPS switched, it resulted in a charge of $827 million from the change in accounting principle.

**Source:** Bob Sechler and Doug Cameron, "UPS Alters Pension-Plan Accounting," *Wall Street Journal* (January 30, 2012).

**When predicting future earnings, how should analysts treat the one-time charge that results from a switch to the different approach for accounting for pension plans? (Go to WileyPLUS for this answer and additional questions.)**

# Quality of Earnings

The quality of a company's earnings is of extreme importance to analysts. A company that has a high **quality of earnings** provides full and transparent information that will not confuse or mislead users of the financial statements.

Recent accounting scandals suggest that some companies are spending too much time managing their income and not enough time managing their business. Here are some of the factors affecting quality of earnings.

## Alternative Accounting Methods

Variations among companies in the application of generally accepted accounting principles may hamper comparability and reduce quality of earnings. For example, suppose one company uses the FIFO method of inventory costing, while another company in the same industry uses LIFO. If inventory is a significant asset to both companies, it is unlikely that their current ratios are comparable. For example, if **General Motors Corporation** used FIFO instead of LIFO for inventory valuation, its inventories in a recent year would have been 26% higher, which significantly affects the current ratio (and other ratios as well).

In addition to differences in inventory costing methods, differences also exist in reporting such items as depreciation and amortization. Although these differences in accounting methods might be detectable from reading the notes to the financial statements, adjusting the financial data to compensate for the different methods is often difficult, if not impossible.

[2]An exception to the general rule is a change in depreciation methods. The effects of this change are reported in current and future periods. Discussion of this approach is left for more advanced courses.

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## Pro Forma Income

Companies whose stock is publicly traded are required to present their income statement following generally accepted accounting principles (GAAP). In recent years, many companies have been also reporting a second measure of income, called pro forma income. **Pro forma income** usually excludes items that the company thinks are unusual or non-recurring. For example, in a recent year, **Cisco Systems** (a high-tech company) reported a quarterly net loss under GAAP of $2.7 billion. Cisco reported pro forma income for the same quarter as a profit of $230 million. This large difference in profits between GAAP income numbers and pro forma income is not unusual. For example, during one nine-month period, the 100 largest companies on the Nasdaq stock exchange reported a total pro forma income of $19.1 billion but a total loss as measured by GAAP of $82.3 billion—a difference of about $100 billion!

To compute pro forma income, companies generally exclude any items they deem inappropriate for measuring their performance. Many analysts and investors are critical of the practice of using pro forma income because these numbers often make companies look better than they really are. As the financial press noted, pro forma numbers might be called "earnings before bad stuff." Companies, on the other hand, argue that pro forma numbers more clearly indicate sustainable income because they exclude unusual and non-recurring expenses. "Cisco's technique gives readers of financial statements a clear picture of Cisco's normal business activities," the company said in a statement issued in response to questions about its pro forma income accounting.

Recently, the SEC provided some guidance on how companies should present pro forma information. Stay tuned: Everyone seems to agree that pro forma numbers can be useful if they provide insights into determining a company's sustainable income. However, many companies have abused the flexibility that pro forma numbers allow and have used the measure as a way to put their companies in a more favorable light.

## Improper Recognition

Because some managers feel pressure from Wall Street to continually increase earnings, they manipulate earnings numbers to meet these expectations. The most common abuse is the improper recognition of revenue. One practice that some companies use is called **channel stuffing**. Offering deep discounts, companies encourage customers to buy early (stuff the channel) rather than later. This boosts the seller's earnings in the current period, but it often leads to a disaster in subsequent periods because customers have no need for additional goods. To illustrate, **Bristol-Myers Squibb** at one time indicated that it used sales incentives to encourage wholesalers to buy more drugs than they needed. As a result, the company had to issue revised financial statements showing corrected revenues and income.

Another practice is the improper capitalization of operating expenses. **WorldCom** capitalized over $7 billion of operating expenses in order to report positive net income. In other situations, companies fail to report all their liabilities. **Enron** promised to make payments on certain contracts if financial difficulty developed, but these guarantees were not reported as liabilities. In addition, disclosure was so lacking in transparency that it was impossible to understand what was happening at the company.

### DO IT! 1 | Unusual Items

In its proposed 2020 income statement, AIR Corporation reports income before income taxes $400,000, unrealized gain on available-for-sale securities $100,000, income taxes $120,000 (not including unusual items), loss from operation of discontinued flower division $50,000, and loss on disposal of discontinued flower division $90,000. The income tax rate is 30%. Prepare a correct statement of comprehensive income, beginning with "Income before income taxes."

**ACTION PLAN**

- Show discontinued operations and other comprehensive income net of tax.

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**Solution**

| AIR Corporation<br>Statement of Comprehensive Income (partial)<br>For the Year Ended December 31, 2020 | | |
|---|---|---|
| Income before income taxes | | $400,000 |
| Income tax expense | | 120,000 |
| Income from continuing operations | | 280,000 |
| Discontinued operations | | |
| Loss from operation of flower division, net of $15,000 income tax savings | $35,000 | |
| Loss on disposal of flower division, net of $27,000 income tax savings | 63,000 | 98,000 |
| Net income | | 182,000 |
| Other comprehensive income | | |
| Unrealized gain on available-for-sale securities, net of $30,000 income taxes | | 70,000 |
| Comprehensive income | | $252,000 |

Related exercise material: **BE18.1, BE18.2, DO IT! 18.1, E18.1, and E18.2.**

# Horizontal Analysis and Vertical Analysis

**LEARNING OBJECTIVE 2**

Apply horizontal analysis and vertical analysis.

As indicated, in assessing the financial performance of a company, investors are interested in the core or sustainable earnings of a company. In addition, investors are interested in making comparisons from period to period. Throughout this textbook, we have relied on three types of comparisons to improve the decision-usefulness of financial information:

1. **Intracompany basis.** Comparisons within a company are often useful to detect changes in financial relationships and significant trends. For example, a comparison of **Kellogg**'s current year's cash amount with the prior year's cash amount shows either an increase or a decrease. Likewise, a comparison of Kellogg's year-end cash amount with the amount of its total assets at year-end shows the proportion of total assets in the form of cash.
2. **Intercompany basis.** Comparisons with other companies provide insight into a company's competitive position. For example, investors can compare Kellogg's total sales for the year with the total sales of its competitors in the breakfast cereal area, such as **General Mills**.
3. **Industry averages.** Comparisons with industry averages provide information about a company's relative position within the industry. For example, financial statement readers can compare Kellogg's financial data with the averages for its industry compiled by financial rating organizations such as **Dun & Bradstreet**, **Moody's**, and **Standard & Poor's**, or with information provided on the Internet by organizations such as **Yahoo!** on its financial site.

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We use three basic tools in financial statement analysis to highlight the significance of financial statement data:

1. Horizontal analysis
2. Vertical analysis
3. Ratio analysis

In previous chapters, we relied primarily on ratio analysis, supplemented with some basic horizontal and vertical analysis. In the remainder of this section, we introduce more formal forms of horizontal and vertical analysis. In the next section, we review ratio analysis in some detail.

## Horizontal Analysis

**Horizontal analysis**, also known as trend analysis, is a technique for evaluating a series of financial statement data over a period of time. Its purpose is to determine the increase or decrease that has taken place, expressed as either an amount or a percentage. For example, here are recent net sales figures (in thousands) of Chicago Cereal Company:

| 2020 | 2019 | 2018 | 2017 | 2016 |
|---|---|---|---|---|
| $11,776 | $10,907 | $10,177 | $9,614 | $8,812 |

If we assume that 2016 is the base year, we can measure all percentage increases or decreases relative to this base-period amount with the formula shown in **Illustration 18.6**.

**ILLUSTRATION 18.6**
**Horizontal analysis—computation of changes since base period**

$$\text{Change Since Base Period} = \frac{\text{Current-Year Amount} - \text{Base-Year Amount}}{\text{Base-Year Amount}}$$

For example, we can determine that net sales for Chicago Cereal increased approximately 9.1% [($9,614 − $8,812) ÷ $8,812] from 2016 to 2017. Similarly, we can also determine that net sales increased by 33.6% [($11,776 − $8,812) ÷ $8,812] from 2016 to 2020.

Alternatively, we can express current-year sales as a percentage of the base period. To do so, we would divide the current-year amount by the base-year amount, as shown in **Illustration 18.7**.

**ILLUSTRATION 18.7**
**Horizontal analysis—computation of current year in relation to base year**

$$\text{Current Results in Relation to Base Period} = \frac{\text{Current-Year Amount}}{\text{Base-Year Amount}}$$

Current-period sales expressed as a percentage of the base period for each of the five years, using 2016 as the base period, are shown in **Illustration 18.8**.

**ILLUSTRATION 18.8**
**Horizontal analysis of net sales**

**Chicago Cereal Company**
**Net Sales (in thousands)**
**Base Period 2016**

| 2020 | 2019 | 2018 | 2017 | 2016 |
|---|---|---|---|---|
| $11,776 | $10,907 | $10,177 | $9,614 | $8,812 |
| 133.6% | 123.8% | 115.5% | 109.1% | 100% |

The large increase in net sales during 2017 would raise questions regarding possible reasons for such a significant change. Chicago Cereal's 2017 notes to the financial statements explain that the company completed an acquisition of Elf Foods Company during 2017. This major acquisition would help explain the increase in sales highlighted by horizontal analysis.

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To further illustrate horizontal analysis, we use the financial statements of Chicago Cereal Company. Its two-year condensed balance sheets for 2020 and 2019, showing dollar and percentage changes, are presented in **Illustration 18.9** (see **Helpful Hint**).

**Chicago Cereal Company**
**Condensed Balance Sheets**
**December 31 (in thousands)**

| | | | Increase (Decrease) during 2020 | |
|---|---|---|---|---|
| **Assets** | **2020** | **2019** | **Amount** | **Percent** |
| Current assets | $ 2,717 | $ 2,427 | $ 290 | 11.9 |
| Property assets (net) | 2,990 | 2,816 | 174 | 6.2 |
| Other assets | 5,690 | 5,471 | 219 | 4.0 |
| Total assets | $11,397 | $10,714 | $ 683 | 6.4 |
| **Liabilities and Stockholders' Equity** | | | | |
| Current liabilities | $ 4,044 | $ 4,020 | $ 24 | 0.6 |
| Long-term liabilities | 4,827 | 4,625 | 202 | 4.4 |
| Total liabilities | 8,871 | 8,645 | 226 | 2.6 |
| Stockholders' equity | | | | |
| Common stock | 493 | 397 | 96 | 24.2 |
| Retained earnings | 3,390 | 2,584 | 806 | 31.2 |
| Treasury stock (cost) | (1,357) | (912) | (445) | 48.8 |
| Total stockholders' equity | 2,526 | 2,069 | 457 | 22.1 |
| Total liabilities and stockholders' equity | $11,397 | $10,714 | $ 683 | 6.4 |

**ILLUSTRATION 18.9**
**Horizontal analysis of balance sheets**

**HELPFUL HINT**
When using horizontal analysis, be sure to examine both dollar amount changes and percentage changes. It is not necessarily bad if a company's earnings are growing at a declining rate. The amount of increase may be the same as or more than the base year, but the percentage change may be less because the base is greater each year.

The comparative balance sheets show that a number of changes occurred in Chicago Cereal's financial position from 2019 to 2020. In the assets section, current assets increased $290,000, or 11.9% ($290 ÷ $2,427), and property assets (net) increased $174,000, or 6.2%. Other assets increased $219,000, or 4.0%. In the liabilities section, current liabilities increased $24,000, or 0.6%, while long-term liabilities increased $202,000, or 4.4%. In the stockholders' equity section, we find that retained earnings increased $806,000, or 31.2%.

**Illustration 18.10** presents two-year comparative income statements of Chicago Cereal Company for 2020 and 2019, showing dollar and percentage changes (see **Helpful Hint**).

**Chicago Cereal Company**
**Condensed Income Statements**
**For the Years Ended December 31 (in thousands)**

| | | | Increase (Decrease) during 2020 | |
|---|---|---|---|---|
| | **2020** | **2019** | **Amount** | **Percent** |
| Net sales | $11,776 | $10,907 | $869 | 8.0 |
| Cost of goods sold | 6,597 | 6,082 | 515 | 8.5 |
| Gross profit | 5,179 | 4,825 | 354 | 7.3 |
| Selling and administrative expenses | 3,311 | 3,059 | 252 | 8.2 |
| Income from operations | 1,868 | 1,766 | 102 | 5.8 |
| Interest expense | 321 | 294 | 27 | 9.2 |
| Income before income taxes | 1,547 | 1,472 | 75 | 5.1 |
| Income tax expense | 444 | 468 | (24) | (5.1) |
| Net income | $ 1,103 | $ 1,004 | $ 99 | 9.9 |

**ILLUSTRATION 18.10**
**Horizontal analysis of income statements**

**HELPFUL HINT**
Note that, in a horizontal analysis, while the amount column is additive (the total is $99,000), the percentage column is not additive (9.9% is not a total).

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Horizontal analysis of the income statements shows the following changes. Net sales increased $869,000, or 8.0% ($869 ÷ $10,907). Cost of goods sold increased $515,000, or 8.5% ($515 ÷ $6,082). Selling and administrative expenses increased $252,000, or 8.2% ($252 ÷ $3,059). Overall, gross profit increased 7.3% and net income increased 9.9%. The increase in net income can be attributed to the increase in net sales and a decrease in income tax expense.

The measurement of changes from period to period in percentages is relatively straightforward and quite useful. However, complications can result in making the computations. If an item has no value in a base year or preceding year and a value in the next year, no percentage change can be computed.

## Vertical Analysis

**Vertical analysis**, also called common-size analysis, is a technique for evaluating financial statement data that expresses each item in a financial statement as a **percentage of a base amount**. For example, on a balance sheet we might express current assets as 22% of total assets (total assets being the base amount). Or, on an income statement we might express selling expenses as 16% of net sales (net sales being the base amount).

Presented in **Illustration 18.11** are the comparative balance sheets of Chicago Cereal for 2020 and 2019, analyzed vertically. The base for the asset items is **total assets**, and the base for the liability and stockholders' equity items is **total liabilities and stockholders' equity**.

**ILLUSTRATION 18.11**
**Vertical analysis of balance sheets**

**Chicago Cereal Company**
**Condensed Balance Sheets**
**December 31 (in thousands)**

| | 2020 | | 2019 | |
|---|---|---|---|---|
| **Assets** | **Amount** | **Percent*** | **Amount** | **Percent*** |
| Current assets | $ 2,717 | 23.8 | $ 2,427 | 22.6 |
| Property assets (net) | 2,990 | 26.2 | 2,816 | 26.3 |
| Other assets | 5,690 | 50.0 | 5,471 | 51.1 |
| Total assets | $11,397 | 100.0 | $10,714 | 100.0 |
| **Liabilities and Stockholders' Equity** | | | | |
| Current liabilities | $ 4,044 | 35.5 | $ 4,020 | 37.5 |
| Long-term liabilities | 4,827 | 42.4 | 4,625 | 43.2 |
| Total liabilities | 8,871 | 77.9 | 8,645 | 80.7 |
| Stockholders' equity | | | | |
| Common stock | 493 | 4.3 | 397 | 3.7 |
| Retained earnings | 3,390 | 29.7 | 2,584 | 24.1 |
| Treasury stock (cost) | (1,357) | (11.9) | (912) | (8.5) |
| Total stockholders' equity | 2,526 | 22.1 | 2,069 | 19.3 |
| Total liabilities and stockholders' equity | $11,397 | 100.0 | $10,714 | 100.0 |

*Numbers have been rounded to total 100%.

In addition to showing the relative size of each category on the balance sheets, vertical analysis can show the percentage change in the individual asset, liability, and stockholders' equity items. In this case, current assets increased $290,000 from 2019 to 2020, and they increased from 22.6% to 23.8% of total assets. Property assets (net) decreased from 26.3% to 26.2% of total assets. Other assets decreased from 51.1% to 50.0% of total assets. Also, retained earnings increased by $806,000 from 2019 to 2020, and total stockholders' equity increased from 19.3% to 22.1% of total liabilities and stockholders' equity. This switch to a higher percentage of equity financing has two causes. First, while total liabilities increased by $226,000, the percentage of liabilities declined from 80.7% to 77.9% of total liabilities and stockholders' equity. Second, retained earnings increased by $806,000, from 24.1% to 29.7%

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of total liabilities and stockholders' equity. Thus, the company shifted toward equity financing by relying less on debt and by increasing the amount of retained earnings.

Vertical analysis of the comparative income statements of Chicago Cereal, shown in Illustration 18.12, reveals that cost of goods sold **as a percentage of net sales** increased from 55.8% to 56.0%, and selling and administrative expenses increased from 28.0% to 28.1%. Net income as a percentage of net sales increased from 9.2% to 9.4%. Chicago Cereal's increase in net income as a percentage of sales is due primarily to the decrease in income tax expense as a percentage of sales.

**ILLUSTRATION 18.12**
**Vertical analysis of income statements**

**Chicago Cereal Company**
**Condensed Income Statements**
**For the Years Ended December 31 (in thousands)**

| | 2020 | | 2019 | |
|---|---|---|---|---|
| | **Amount** | **Percent*** | **Amount** | **Percent*** |
| Net sales | $11,776 | **100.0** | $10,907 | **100.0** |
| Cost of goods sold | 6,597 | **56.0** | 6,082 | **55.8** |
| Gross profit | 5,179 | **44.0** | 4,825 | **44.2** |
| Selling and administrative expenses | 3,311 | **28.1** | 3,059 | **28.0** |
| Income from operations | 1,868 | **15.9** | 1,766 | **16.2** |
| Interest expense | 321 | **2.7** | 294 | **2.7** |
| Income before income taxes | 1,547 | **13.2** | 1,472 | **13.5** |
| Income tax expense | 444 | **3.8** | 468 | **4.3** |
| Net income | $ 1,103 | **9.4** | $ 1,004 | **9.2** |

*Numbers have been rounded to total 100%.

Vertical analysis also enables you to compare companies of different sizes. For example, one of Chicago Cereal's competitors is Giant Mills. Giant Mills' sales are 1,000 times larger than those of Chicago Cereal. Vertical analysis enables us to meaningfully compare the condensed income statements of Chicago Cereal and Giant Mills, as shown in Illustration 18.13.

**ILLUSTRATION 18.13**
**Intercompany comparison by vertical analysis**

**Condensed Income Statements**
**For the Year Ended December 31, 2020**

| | Chicago Cereal (in thousands) | | Giant Mills, Inc. (in millions) | |
|---|---|---|---|---|
| | **Amount** | **Percent*** | **Amount** | **Percent*** |
| Net sales | $11,776 | **100.0** | $17,910 | **100.0** |
| Cost of goods sold | 6,597 | **56.0** | 11,540 | **64.4** |
| Gross profit | 5,179 | **44.0** | 6,370 | **35.6** |
| Selling and administrative expenses | 3,311 | **28.1** | 3,474 | **19.4** |
| Non-recurring charges and (gains) | 0 | **—** | (62) | **(0.3)** |
| Income from operations | 1,868 | **15.9** | 2,958 | **16.5** |
| Other expenses and revenues (including income taxes) | 765 | **6.5** | 1,134 | **6.3** |
| Net income | $ 1,103 | **9.4** | $ 1,824 | **10.2** |

*Numbers have been rounded to total 100%.

Although Chicago Cereal's net sales are much less than those of Giant Mills, vertical analysis eliminates the impact of this size difference for our analysis. Chicago Cereal has a higher gross profit percentage 44.0%, compared to 35.6% for Giant Mills. But, Chicago Cereal's selling and administrative expenses are 28.1% of net sales, while those of Giant Mills are 19.4% of net sales. Looking at net income, we see that Giant Mills' percentage is higher. Chicago Cereal's net income as a percentage of net sales is 9.4%, compared to 10.2% for Giant Mills.

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## Anatomy of a Fraud

Sometimes relationships between numbers can be used to detect fraud. Financial ratios that appear abnormal or statistical abnormalities in the numbers themselves can reveal fraud. For example, the fact that **WorldCom**'s line costs, as a percentage of either total expenses or revenues, differed very significantly from its competitors should have alerted people to the possibility of fraud. Or, consider the case of a bank manager, who cooperated with a group of his friends to defraud the bank's credit card department. The manager's friends would apply for credit cards and then run up balances of slightly less than $5,000. The bank had a policy of allowing bank personnel to write-off balances of less than $5,000 without seeking supervisor approval. The fraud was detected by applying statistical analysis based on Benford's Law. Benford's Law states that in a random collection of numbers, the frequency of lower digits (e.g., 1, 2, or 3) should be much higher than higher digits (e.g., 7, 8, or 9). In this case, bank auditors analyzed the first two digits of amounts written off. There was a spike at 48 and 49, which was not consistent with what would be expected if the numbers were random.

### Total take: Thousands of dollars

#### The Missing Control

***Independent internal verification.*** While it might be efficient to allow employees to write off accounts below a certain level, it is important that these write-offs be reviewed and verified periodically. Such a review would likely call attention to an employee with large amounts of write-offs, or in this case, write-offs that were frequently very close to the approval threshold.

**Source:** Mark J. Nigrini, "I've Got Your Number," *Journal of Accountancy Online* (May 1999).

## DO IT! 2 | Horizontal Analysis

**ACTION PLAN**

- **Find the percentage change by dividing the amount of the increase by the 2019 amount (base year).**

Summary financial information for Rosepatch Company is as follows.

| | December 31, 2020 | December 31, 2019 |
|---|---|---|
| Current assets | $234,000 | $180,000 |
| Plant assets (net) | 756,000 | 420,000 |
| Total assets | $990,000 | $600,000 |

Compute the amount and percentage changes in 2020 using horizontal analysis, assuming 2019 is the base year.

### Solution

| | Increase in 2020 | |
|---|---|---|
| | Amount | Percent |
| Current assets | $ 54,000 | 30% [($234,000 – $180,000) ÷ $180,000] |
| Plant assets (net) | 336,000 | 80% [($756,000 – $420,000) ÷ $420,000] |
| Total assets | $390,000 | 65% [($990,000 – $600,000) ÷ $600,000] |

Related exercise material: **BE18.4, BE18.6, BE18.7, BE18.9, DO IT! 18.2, E18.3, E18.5, and E18.6.**

# Ratio Analysis

**LEARNING OBJECTIVE 3**

Analyze a company's performance using ratio analysis.

**Ratio analysis** expresses the relationship among selected items of financial statement data. A **ratio** expresses the mathematical relationship between one quantity and another. The relationship is expressed in terms of either a percentage, a rate, or a simple proportion. To illustrate,

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in a recent year, **Nike, Inc.** had current assets of $13,626 million and current liabilities of $3,926 million. We can find the relationship between these two measures by dividing current assets by current liabilities. The alternative means of expression are as follows.

**Percentage:** Current assets are 347% of current liabilities.
**Rate:** Current assets are 3.47 times current liabilities.
**Proportion:** The relationship of current assets to liabilities is 3.47:1.

To analyze the primary financial statements, we can use ratios to evaluate liquidity, profitability, and solvency. **Illustration 18.14** describes these classifications.

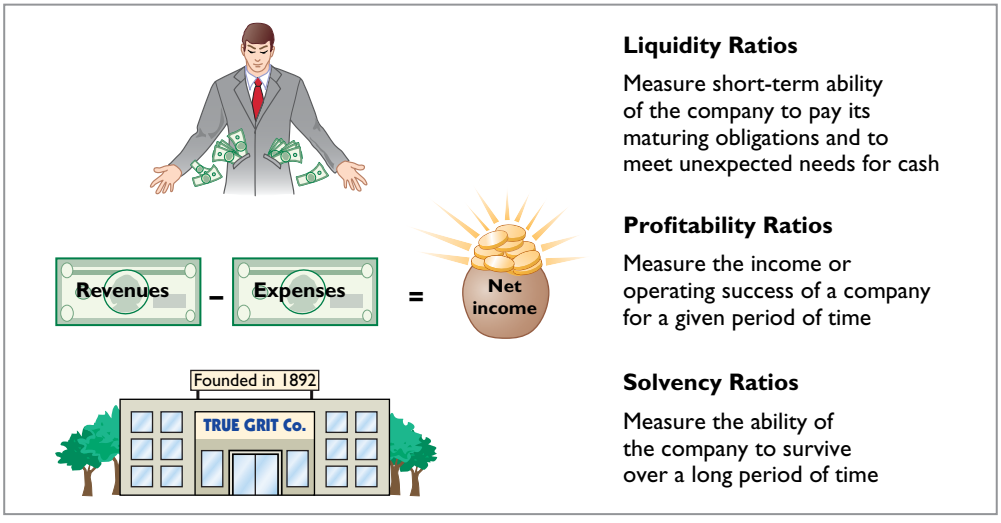
Revenues
–
Expenses
=
Net income
Founded in 1892
TRUE GRIT Co.
Liquidity Ratios
Measure short-term ability of the company to pay its maturing obligations and to meet unexpected needs for cash
Profitability Ratios
Measure the income or operating success of a company for a given period of time
Solvency Ratios
Measure the ability of the company to survive over a long period of time

**ILLUSTRATION 18.14**
**Financial ratio classifications**

Ratios can provide clues to underlying conditions that may not be apparent from individual financial statement components. However, a single ratio by itself is not very meaningful. Thus, in the discussion of ratios we will use the following types of comparisons.

1. **Intracompany comparisons** for two years for Chicago Cereal.
2. **Industry average comparisons** based on median ratios for the industry.
3. **Intercompany comparisons** based on Giant Mills as Chicago Cereal's principal competitor.

## Liquidity Ratios

**Liquidity ratios** (**Illustration 18.15**) measure the short-term ability of the company to pay its maturing obligations and to meet unexpected needs for cash. Short-term creditors such as bankers and suppliers are particularly interested in assessing liquidity.

| Liquidity Ratios | |
|---|---|
| Working capital | Current assets – Current liabilities |
| Current ratio | $\frac{\text{Current assets}}{\text{Current liabilities}}$ |
| Inventory turnover | $\frac{\text{Cost of goods sold}}{\text{Average inventory}}$ |
| Days in inventory | $\frac{365 \text{ days}}{\text{Inventory turnover}}$ |
| Accounts receivable turnover | $\frac{\text{Net credit sales}}{\text{Average net accounts receivable}}$ |
| Average collection period | $\frac{365 \text{ days}}{\text{Accounts receivable turnover}}$ |

**ILLUSTRATION 18.15**
**Summary of liquidity ratios**

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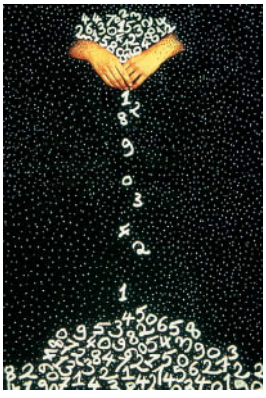
## Investor Insight



Nova Stock/SuperStock

### How to Manage the Current Ratio

The apparent simplicity of the current ratio can have real-world limitations because adding equal amounts to both the numerator and the denominator causes the ratio to decrease.

Assume, for example, that a company has $2,000,000 of current assets and $1,000,000 of current liabilities. Its current ratio is 2:1. If it purchases $1,000,000 of inventory on account, it will have $3,000,000 of current assets and $2,000,000 of current liabilities. Its current ratio decreases to 1.5:1. If, instead, the company pays off $500,000 of its current liabilities, it will have $1,500,000 of current assets and $500,000 of current liabilities. Its current ratio increases to 3:1. Thus, any trend analysis should be done with care because the ratio is susceptible to quick changes and is easily influenced by management.

**How might management influence a company's current ratio? (Go to WileyPLUS for this answer and additional questions.)**

# Solvency Ratios

**Solvency ratios** (**Illustration 18.16**) measure the ability of the company to survive over a long period of time. Long-term creditors and stockholders are interested in a company's long-run solvency, particularly its ability to pay interest as it comes due and to repay the balance of debt at its maturity.

**ILLUSTRATION 18.16**
**Summary of solvency ratios**

| Solvency Ratios | |
|---|---|
| Debt to assets ratio | $\frac{\text{Total liabilities}}{\text{Total assets}}$ |
| Times interest earned | $\frac{\text{Net income + Interest expense + Income tax expense}}{\text{Interest expense}}$ |
| Free cash flow | Net cash provided by operating activities − Capital expenditures − Cash dividends |

# Profitability Ratios

**Profitability ratios** (**Illustration 18.17**) measure the income or operating success of a company for a given period of time. A company's income, or lack of it, affects its ability to obtain debt

**ILLUSTRATION 18.17**
**Summary of profitability ratios**

| Profitability Ratios | |
|---|---|
| Earnings per share | $\frac{\text{Net income – Preferred dividends}}{\text{Weighted-average common shares outstanding}}$ |
| Price-earnings ratio | $\frac{\text{Market price per share}}{\text{Earnings per share}}$ |
| Gross profit rate | $\frac{\text{Gross profit}}{\text{Net sales}}$ |
| Profit margin | $\frac{\text{Net income}}{\text{Net sales}}$ |
| Return on assets | $\frac{\text{Net income}}{\text{Average total assets}}$ |
| Asset turnover | $\frac{\text{Net sales}}{\text{Average total assets}}$ |
| Payout ratio | $\frac{\text{Cash dividends declared on common stock}}{\text{Net income}}$ |
| Return on common stockholders' equity | $\frac{\text{Net income – Preferred dividends}}{\text{Average common stockholders' equity}}$ |

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and equity financing, its liquidity position, and its ability to grow. As a consequence, creditors and investors alike are interested in evaluating profitability. Profitability is frequently used as the ultimate test of management's operating effectiveness.

## Investor Insight

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### High Ratings Can Bring Low Returns

**Moody's**, **Standard & Poor's**, and **Fitch** are three big firms that perform financial analysis on publicly traded companies and then publish ratings of the companies' creditworthiness. Investors and lenders rely heavily on these ratings in making investment and lending decisions. Some people feel that the collapse of the financial markets was worsened by inadequate research reports and ratings provided by the financial rating agencies. Critics contend that the rating agencies were reluctant to give large companies low ratings because they feared that by offending them they would lose out on business opportunities. For example, the rating agencies gave many so-called mortgage-backed securities ratings that suggested that they were low risk. Later, many of these very securities became completely worthless. Steps have been taken to reduce the conflicts of interest that lead to these faulty ratings.

**Source:** Aaron Lucchetti and Judith Burns, "Moody's CEO Warned Profit Push Posed a Risk to Quality of Ratings," *Wall Street Journal Online* (October 23, 2008).

**Why are credit rating agencies important to the financial markets? (Go to WileyPLUS for this answer and additional questions.)**

# Comprehensive Example of Ratio Analysis

In this section, we provide a comprehensive review of ratios used for evaluating the financial health and performance of a company. We use the financial information in **Illustrations 18.18** through **18.21** to calculate Chicago Cereal Company's 2020 ratios. You can use these data to review the computations.

**Chicago Cereal Company**
**Balance Sheets**
**December 31 (in thousands)**

| Assets | 2020 | 2019 |
|---|---|---|
| Current assets | | |
| Cash | $ 524 | $ 411 |
| Accounts receivable | 1,026 | 945 |
| Inventory | 924 | 824 |
| Prepaid expenses and other current assets | 243 | 247 |
| Total current assets | 2,717 | 2,427 |
| Property assets (net) | 2,990 | 2,816 |
| Intangibles and other assets | 5,690 | 5,471 |
| Total assets | $11,397 | $10,714 |
| **Liabilities and Stockholders' Equity** | | |
| Current liabilities | $ 4,044 | $ 4,020 |
| Long-term liabilities | 4,827 | 4,625 |
| Stockholders' equity—common | 2,526 | 2,069 |
| Total liabilities and stockholders' equity | $11,397 | $10,714 |

**ILLUSTRATION 18.18**
**Chicago Cereal Company's balance sheets**

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**ILLUSTRATION 18.19**
**Chicago Cereal Company's income statements**

**Chicago Cereal Company**
**Condensed Income Statements**
**For the Years Ended December 31 (in thousands)**

| | 2020 | 2019 |
|---|---|---|
| Net sales | $11,776 | $10,907 |
| Cost of goods sold | 6,597 | 6,082 |
| Gross profit | 5,179 | 4,825 |
| Selling and administrative expenses | 3,311 | 3,059 |
| Income from operations | 1,868 | 1,766 |
| Interest expense | 321 | 294 |
| Income before income taxes | 1,547 | 1,472 |
| Income tax expense | 444 | 468 |
| Net income | $ 1,103 | $ 1,004 |

**ILLUSTRATION 18.20**
**Chicago Cereal Company's statements of cash flows**

**Chicago Cereal Company**
**Condensed Statements of Cash Flows**
**For the Years Ended December 31 (in thousands)**

| | 2020 | 2019 |
|---|---|---|
| Cash flows from operating activities | | |
| Cash receipts from operating activities | $11,695 | $10,841 |
| Cash payments for operating activities | 10,192 | 9,431 |
| Net cash provided by operating activities | 1,503 | 1,410 |
| Cash flows from investing activities | | |
| Purchases of property, plant, and equipment | (472) | (453) |
| Other investing activities | (129) | 8 |
| Net cash used in investing activities | (601) | (445) |
| Cash flows from financing activities | | |
| Issuance of common stock | 163 | 218 |
| Issuance of debt | 2,179 | 721 |
| Reductions of debt | (2,011) | (650) |
| Payment of dividends | (475) | (450) |
| Repurchase of common stock and other items | (645) | (612) |
| Net cash provided (used) by financing activities | (789) | (773) |
| Increase (decrease) in cash and cash equivalents | 113 | 192 |
| Cash and cash equivalents at beginning of year | 411 | 219 |
| Cash and cash equivalents at end of year | $ 524 | $ 411 |

**ILLUSTRATION 18.21**
**Additional information for Chicago Cereal Company**

**Additional information:**

| | 2020 | 2019 |
|---|---|---|
| Weighted-average number of shares (thousands) | 418.7 | 418.5 |
| Stock price at year-end | $52.92 | $50.06 |

As indicated in the chapter, we can classify ratios into three types for analysis of the primary financial statements:

1. **Liquidity ratios.** Measures of the short-term ability of the company to pay its maturing obligations and to meet unexpected needs for cash.

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2. **Solvency ratios.** Measures of the ability of the company to survive over a long period of time.
3. **Profitability ratios.** Measures of the income or operating success of a company for a given period of time.

As a tool of analysis, ratios can provide clues to underlying conditions that may not be apparent from an inspection of the individual components of a particular ratio. But, a single ratio by itself is not very meaningful. Accordingly, in this discussion we use the following three comparisons.

1. **Intracompany comparisons** covering two years for Chicago Cereal (using comparative financial information from Illustrations 18.18 through 18.21).
2. **Intercompany comparisons** using Giant Mills as one of Chicago Cereal's competitors.
3. **Industry average comparisons** based on **MSN.com** median ratios for manufacturers of flour and other grain mill products and comparisons with other sources. For some of the ratios that we use, industry comparisons are not available (denoted "na").

## Liquidity Ratios

Liquidity ratios measure the short-term ability of the company to pay its maturing obligations and to meet unexpected needs for cash. Short-term creditors such as bankers and suppliers are particularly interested in assessing liquidity. The measures used to determine the company's short-term debt-paying ability are the current ratio, the accounts receivable turnover, the average collection period, the inventory turnover, and days in inventory.

1. **Current ratio.** The **current ratio** expresses the relationship of current assets to current liabilities, computed by dividing current assets by current liabilities. It is widely used for evaluating a company's liquidity and short-term debt-paying ability. The 2020 and 2019 current ratios for Chicago Cereal and comparative data are shown in **Illustration 18.22**.

**ILLUSTRATION 18.22** **Current ratio**

| Ratio | Formula | Chicago Cereal | | | Giant Mills | Industry |
|---|---|---|---|---|---|---|
| | | | 2020 | 2019 | 2020 | Average |
| Current ratio | Current assets / Current liabilities | $2,717 / $4,044 = | .67 | .60 | .67 | 1.06 |

What do the measures tell us? Chicago Cereal's 2020 current ratio of .67 means that for every dollar of current liabilities, it has $0.67 of current assets. We sometimes state such ratios as .67:1 to reinforce this interpretation. Its current ratio—and therefore its liquidity—increased significantly in 2020. It is well below the industry average but the same as that of Giant Mills.

2. **Accounts receivable turnover.** Analysts can measure liquidity by how quickly a company converts certain assets to cash. A low value for the current ratio can sometimes be compensated for if some of the company's current assets are highly liquid.

How liquid, for example, are the receivables? The ratio used to assess the liquidity of the receivables is the **accounts receivable turnover**, which measures the number of times, on average, a company collects receivables during the period. The accounts receivable turnover is computed by dividing net credit sales (net sales less cash sales) by average net accounts receivable during the year. The accounts receivable turnover for Chicago Cereal is shown in **Illustration 18.23**.

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**ILLUSTRATION 18.23** Accounts receivable turnover

| Ratio | Formula | Chicago Cereal | | | Giant Mills | Industry |
|---|---|---|---|---|---|---|
| | | | 2020 | 2019 | 2020 | Average |
| Accounts receivable turnover | Net credit sales / Average net accounts receivable | $\frac{\$11{,}776}{(\$1{,}026 + \$945) \div 2}$ = | 11.9 | 12.0 | 12.2 | 11.2 |

In computing the rate, we assumed that all Chicago Cereal's sales are credit sales. Its accounts receivable turnover declined slightly in 2020. The turnover of 11.9 times is higher than the industry average of 11.2 times, and slightly lower than Giant Mills' turnover of 12.2 times.

3. **Average collection period.** A popular variant of the accounts receivable turnover converts it into an **average collection period** in days. This is done by dividing the accounts receivable turnover into 365 days. The average collection period for Chicago Cereal is shown in **Illustration 18.24**.

**ILLUSTRATION 18.24** Average collection period

| Ratio | Formula | Chicago Cereal | | | Giant Mills | Industry |
|---|---|---|---|---|---|---|
| | | | 2020 | 2019 | 2020 | Average |
| Average collection period | 365 days / Accounts receivable turnover | $\frac{365}{11.9}$ = | 30.7 | 30.4 | 29.9 | 32.6 |

Chicago Cereal's 2020 accounts receivable turnover of 11.9 times is divided into 365 days to obtain approximately 31 days. This means that the average collection period for receivables is about 31 days. Its average collection period is slightly longer than that of Giant Mills and shorter than that of the industry.

Analysts frequently use the average collection period to assess the effectiveness of a company's credit and collection policies. The general rule is that the collection period should not greatly exceed the credit term period (i.e., the time allowed for payment).

4. **Inventory turnover.** The **inventory turnover** measures the number of times average inventory was sold during the period. Its purpose is to measure the liquidity of the inventory. A high measure indicates that inventory is being sold and replenished frequently. The inventory turnover is computed by dividing the cost of goods sold by the average inventory during the period. Unless seasonal factors are significant, average inventory can be computed from the beginning and ending inventory balances. Chicago Cereal's inventory turnover is shown in **Illustration 18.25**.

**ILLUSTRATION 18.25** Inventory turnover

| Ratio | Formula | Chicago Cereal | | | Giant Mills | Industry |
|---|---|---|---|---|---|---|
| | | | 2020 | 2019 | 2020 | Average |
| Inventory turnover | Cost of goods sold / Average inventory | $\frac{\$6{,}597}{(\$924 + \$824) \div 2}$ = | 7.5 | 7.9 | 7.4 | 6.7 |

Chicago Cereal's inventory turnover decreased slightly in 2020. The turnover of 7.5 times is higher than the industry average of 6.7 times and similar to that of Giant Mills. Generally, the faster the inventory turnover, the less cash is tied up in inventory and the

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less the chance of inventory becoming obsolete. Of course, a downside of high inventory turnover is that it sometimes results in lost sales because if a company keeps less inventory on hand, it is more likely to run out of inventory when it is needed.

5. **Days in inventory.** A variant of the inventory turnover is the **days in inventory**, which measures the average number of days inventory is held. The days in inventory for Chicago Cereal is shown in **Illustration 18.26**.

**ILLUSTRATION 18.26**
**Days in inventory**

| Ratio | Formula | Chicago Cereal | | | Giant Mills | Industry |
|---|---|---|---|---|---|---|
| | | | 2020 | 2019 | 2020 | Average |
| Days in inventory | $\frac{\text{365 days}}{\text{Inventory turnover}}$ | $\frac{365}{7.5}$ = | 48.7 | 46.2 | 49.3 | 54.5 |

Chicago Cereal's 2020 inventory turnover of 7.5 divided into 365 is approximately 49 days. An average selling time of 49 days is faster than the industry average and similar to that of Giant Mills. Some of this difference might be explained by differences in product lines across the two companies, although in many ways the types of products of these two companies are quite similar.

Inventory turnovers vary considerably among industries. For example, grocery store chains have a turnover of 10 times and an average selling period of 37 days. In contrast, jewelry stores have an average turnover of 1.3 times and an average selling period of 281 days. Within a company, there may even be significant differences in inventory turnover among different types of products. Thus, in a grocery store the turnover of perishable items such as produce, meats, and dairy products is faster than the turnover of soaps and detergents.

To conclude, nearly all of these liquidity measures suggest that Chicago Cereal's liquidity changed little during 2020. Its liquidity appears acceptable when compared to the industry as a whole and when compared to Giant Mills.

## Solvency Ratios

**Solvency ratios** measure the ability of the company to survive over a long period of time. Long-term creditors and stockholders are interested in a company's long-run solvency, particularly its ability to pay interest as it comes due and to repay the face value of debt at maturity. The debt to assets ratio and times interest earned provide information about debt-paying ability. In addition, free cash flow provides information about the company's solvency and its ability to pay additional dividends or invest in new projects.

6. **Debt to assets ratio.** The **debt to assets ratio** measures the percentage of total financing provided by creditors. It is computed by dividing total liabilities (both current and long-term debt) by total assets. This ratio indicates the degree of financial leveraging. It also provides some indication of the company's ability to withstand losses without impairing the interests of its creditors. The higher the percentage of debt to assets, the greater the risk that the company may be unable to meet its maturing obligations. Thus, from the creditors' point of view, a low ratio of debt to assets is desirable. Chicago Cereal's debt to assets ratio is shown in **Illustration 18.27**.

**ILLUSTRATION 18.27**
**Debt to assets ratio**

| Ratio | Formula | Chicago Cereal | | | Giant Mills | Industry |
|---|---|---|---|---|---|---|
| | | | 2020 | 2019 | 2020 | Average |
| Debt to assets ratio | $\frac{\text{Total liabilities}}{\text{Total assets}}$ | $\frac{\$8,871}{\$11,397}$ = | 78% | 81% | 55% | 55% |

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Chicago Cereal's 2020 ratio of 78% means that creditors have provided financing sufficient to cover 78% of the company's total assets. Alternatively, it says that it would have to liquidate 78% of its assets at their book value in order to pay off all of its debts. Its ratio is above the industry average of 55%, as well as that of Giant Mills. This suggests that it is less solvent than the industry average and Giant Mills. Chicago Cereal's solvency improved slightly during the year.

The adequacy of this ratio is often judged in light of the company's earnings. Generally, companies with relatively stable earnings, such as public utilities, have higher debt to assets ratios than cyclical companies with widely fluctuating earnings, such as many high-tech companies.

Another ratio with a similar meaning is the **debt to equity ratio**. It shows the relative use of borrowed funds (total liabilities) compared with resources invested by the owners. Because this ratio can be computed in several ways, be careful when making comparisons with it. Debt may be defined to include only the noncurrent portion of liabilities, and intangible assets may be excluded from stockholders' equity (which would equal tangible net worth). If debt and assets are defined as above (all liabilities and all assets), then when the debt to assets ratio equals 50%, the debt to equity ratio is 1:1.

7. **Times interest earned.** The **times interest earned** (also called interest coverage) indicates the company's ability to meet interest payments as they come due. It is computed by dividing the sum of net income, interest expense, and income tax expense by interest expense. Note that this ratio uses income before interest expense and income taxes because this amount represents what is available to cover interest. Chicago Cereal's times interest earned is shown in Illustration 18.28.

**ILLUSTRATION 18.28** **Times interest earned**

| Ratio | Formula | Chicago Cereal | 2020 | 2019 | Giant Mills 2020 | Industry Average |
|---|---|---|---|---|---|---|
| Times interest earned | $\frac{\text{Net Income} + \text{Interest expense} + \text{Income tax expense}}{\text{Interest expense}}$ | $\frac{\$1{,}103 + \$321 + \$444}{\$321} =$ | 5.8 | 6.0 | 9.9 | 5.5 |

For Chicago Cereal, the 2020 interest coverage was 5.8 times, which indicates that income before interest and taxes was 5.8 times the amount needed for interest expense. This is less than the rate for Giant Mills, but it slightly exceeds the rate for the industry. The debt to assets ratio decreased for Chicago Cereal during 2020, and its times interest earned held relatively constant.

8. **Free cash flow.** One indication of a company's solvency, as well as of its ability to pay dividends or expand operations, is the amount of excess cash it generated after investing in capital expenditures and paying dividends. This amount is referred to as **free cash flow**. For example, if you generate $100,000 of net cash provided by operating activities but you spend $30,000 on capital expenditures and pay $10,000 in dividends, you have $60,000 ($100,000 − $30,000 − $10,000) to use either to expand operations, pay additional dividends, or pay down debt. Chicago Cereal's free cash flow is shown in Illustration 18.29.

**ILLUSTRATION 18.29** **Free cash flow**

| Ratio | Formula | Chicago Cereal | 2020 | 2019 | Giant Mills 2020 | Industry Average |
|---|---|---|---|---|---|---|
| Free cash flow | Net cash provided by operating activities − Capital expenditures − Cash dividends | $\$1{,}503 - \$472 - \$475 =$ | $556 (in thousands) | $507 | $895 (in millions) | na |

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Chicago Cereal's free cash flow increased slightly from 2019 to 2020. During both years, the net cash provided by operating activities was more than enough to allow it to acquire additional productive assets and maintain dividend payments. It could have used the remaining cash to reduce debt if necessary. Given that Chicago Cereal is much smaller than Giant Mills, we would expect its free cash flow to be substantially smaller, which it is.

## Profitability Ratios

**Profitability ratios** measure the income or operating success of a company for a given period of time. A company's income, or the lack of it, affects its ability to obtain debt and equity financing, its liquidity position, and its ability to grow. As a consequence, creditors and investors alike are interested in evaluating profitability. Analysts frequently use profitability as the ultimate test of management's operating effectiveness.

The relationships among measures of profitability are very important. Understanding them can help management determine where to focus its efforts to improve profitability. **Illustration 18.30** diagrams these relationships. Our discussion of Chicago Cereal's profitability is structured around this diagram.

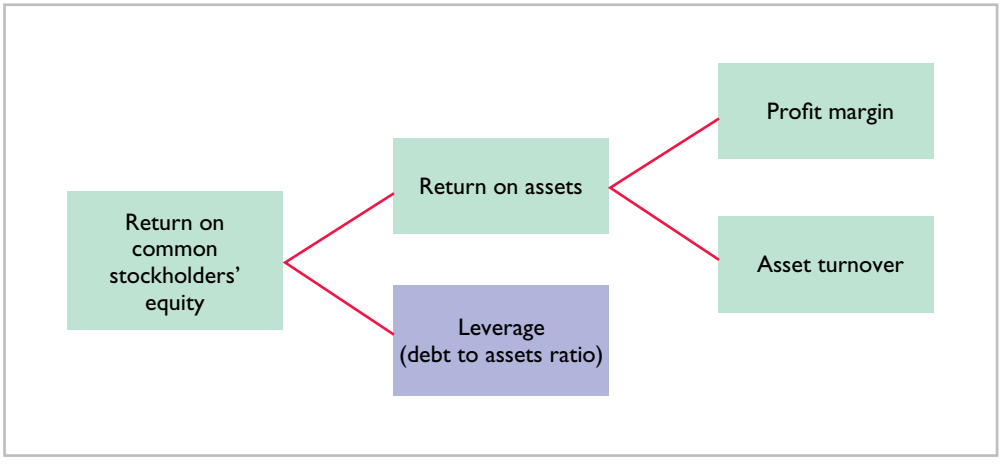


**ILLUSTRATION 18.30** **Relationships among profitability measures**

9. **Return on common stockholders' equity (ROE).** A widely used measure of profitability from the common stockholder's viewpoint is the **return on common stockholders' equity (ROE)**. This ratio shows how many dollars of net income the company earned for each dollar invested by the owners. It is computed by dividing net income minus any preferred dividends—that is, income available to common stockholders—by average common stockholders' equity. The return on common stockholders' equity for Chicago Cereal is shown in **Illustration 18.31**.

**ILLUSTRATION 18.31** **Return on common stockholders' equity**

| Ratio | Formula | Chicago Cereal | | Giant Mills | Industry |
|---|---|---|---|---|---|
| | | 2020 | 2019 | 2020 | Average |
| Return on common stockholders' equity | $\frac{\text{Net Income} - \text{Preferred dividends}}{\text{Average common stockholders' equity}}$ | $\frac{\$1{,}103 - \$0}{(\$2{,}526 + \$2{,}069) \div 2}$ = 48% | 46% | 25% | 19% |

Chicago Cereal's 2020 return on common stockholders' equity is unusually high at 48%. The industry average is 19% and Giant Mills' return is 25%. In the subsequent sections, we investigate the causes of this high return.

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**10. Return on assets.** The return on common stockholders' equity is affected by two factors: the **return on assets** and the degree of leverage. The return on assets measures the overall profitability of assets in terms of the income earned on each dollar invested in assets. It is computed by dividing net income by average total assets. Chicago Cereal's return on assets is shown in **Illustration 18.32**.

**ILLUSTRATION 18.32** **Return on assets**

| Ratio | Formula | Chicago Cereal | | | Giant Mills | Industry |
|---|---|---|---|---|---|---|
| | | | 2020 | 2019 | 2020 | Average |
| Return on assets | Net income / Average total assets | $\frac{\$1,103}{(\$11,397 + \$10,714) \div 2}$ = | 10.0% | 9.4% | 6.2% | 5.3% |

Chicago Cereal had a 10.0% return on assets in 2020. This rate is significantly higher than that of Giant Mills and the industry average.

Note that its rate of return on common stockholders' equity (48%) is substantially higher than its rate of return on assets (10%). The reason is that it has made effective use of **leverage**. **Leveraging** or **trading on the equity** at a gain means that the company has borrowed money at a lower rate of interest than the rate of return it earns on the assets it purchased with the borrowed funds. Leverage enables management to use money supplied by nonowners to increase the return to owners.

A comparison of the rate of return on assets with the rate of interest paid for borrowed money indicates the profitability of trading on the equity. If you borrow money at 8% and your rate of return on assets is 11%, you are trading on the equity at a gain. Note, however, that trading on the equity is a two-way street. For example, if you borrow money at 11% and earn only 8% on it, you are trading on the equity at a loss.

Chicago Cereal earns more on its borrowed funds than it has to pay in interest. Thus, the return to stockholders exceeds the return on assets because of the positive benefit of leverage. Recall from our earlier discussion that Chicago Cereal's percentage of debt financing, as measured by the ratio of debt to assets (or debt to equity), was higher than Giant Mills' and the industry average. It appears that Chicago Cereal's high return on common stockholders' equity is due in part to its use of leverage.

**11. Profit margin.** The return on assets is affected by two factors, the first of which is the profit margin. The **profit margin**, or rate of return on sales, is a measure of the percentage of each dollar of sales that results in net income. It is computed by dividing net income by net sales for the period. Chicago Cereal's profit margin is shown in **Illustration 18.33**.

**ILLUSTRATION 18.33**
**Profit margin**

| Ratio | Formula | Chicago Cereal | | | Giant Mills | Industry |
|---|---|---|---|---|---|---|
| | | | 2020 | 2019 | 2020 | Average |
| Profit margin | Net income / Net sales | $\frac{\$1,103}{\$11,776}$ = | 9.4% | 9.2% | 8.2% | 6.1% |

Chicago Cereal experienced a slight increase in its profit margin from 2019 to 2020 of 9.2% to 9.4%. Its profit margin was higher than the industry average and that of Giant Mills.

High-volume (high inventory turnover) businesses such as grocery stores and pharmacy chains generally have low profit margins. Low-volume businesses such as jewelry stores and airplane manufacturers have high profit margins.

**12. Asset turnover.** The other factor that affects the return on assets is the asset turnover. The **asset turnover** measures how efficiently a company uses its assets to generate sales. It is determined by dividing net sales by average total assets for the period. The resulting number shows the dollars of sales produced by each dollar invested in assets. **Illustration 18.34** shows the asset turnover for Chicago Cereal.

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**ILLUSTRATION 18.34** Asset turnover

| Ratio | Formula | Chicago Cereal | 2020 | 2019 | Giant Mills 2020 | Industry Average |
|---|---|---|---|---|---|---|
| Asset turnover | Net sales / Average total assets | $11,776 / ($11,397 + $10,714) ÷ 2 = | 1.07 | 1.02 | .76 | .87 |

The asset turnover shows that in 2020, Chicago Cereal generated sales of $1.07 for each dollar it had invested in assets. The ratio rose from 2019 to 2020. Its asset turnover is above the industry average and that of Giant Mills.

Asset turnovers vary considerably among industries. The average asset turnover for utility companies is .45, for example, while the grocery store industry has an average asset turnover of 3.49.

In summary, Chicago Cereal's return on assets increased from 9.4% in 2019 to 10.0% in 2020. Underlying this increase was an increased profitability on each dollar of sales (as measured by the profit margin) and a rise in the sales-generating efficiency of its assets (as measured by the asset turnover). We can analyze the combined effects of profit margin and asset turnover on return on assets for Chicago Cereal as shown in **Illustration 18.35**.

**ILLUSTRATION 18.35** Composition of return on assets

| Ratios: | Profit Margin | × | Asset Turnover | = | Return on Assets |
|---|---|---|---|---|---|
| | Net Income / Net Sales | × | Net Sales / Average Total Assets | = | Net Income / Average Total Assets |
| **Chicago Cereal** | | | | | |
| 2020 | 9.4% | × | 1.07 times | = | 10.1%* |
| 2019 | 9.2% | × | 1.02 times | = | 9.4% |

*Difference from value in Illustration 18.32 due to rounding.

**13. Gross profit rate.** One factor that strongly influences the profit margin is the gross profit rate. The **gross profit rate** is determined by dividing gross profit (net sales less cost of goods sold) by net sales. This rate indicates a company's ability to maintain an adequate selling price above its cost of goods sold.

As an industry becomes more competitive, this ratio declines. For example, in the early years of the personal computer industry, gross profit rates were quite high. Today, because of increased competition and a belief that most brands of personal computers are similar in quality, gross profit rates have become thin. Analysts should closely monitor gross profit rates over time. **Illustration 18.36** shows Chicago Cereal's gross profit rate.

**ILLUSTRATION 18.36** Gross profit rate

| Ratio | Formula | Chicago Cereal | 2020 | 2019 | Giant Mills 2020 | Industry Average |
|---|---|---|---|---|---|---|
| Gross profit rate | Gross profit / Net sales | $5,179 / $11,776 = | 44% | 44% | 34% | 30% |

Chicago Cereal's gross profit rate remained constant from 2019 to 2020.

**14. Earnings per share (EPS).** Stockholders usually think in terms of the number of shares they own or plan to buy or sell. Expressing net income earned on a per share basis provides a useful perspective for determining profitability. **Earnings per share** is a measure of the net income earned on each share of common stock. It is computed by dividing net income by the average number of common shares outstanding during the year.

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The terms "net income per share" or "earnings per share" refer to the amount of net income applicable to each share of **common stock**. Therefore, when we compute earnings per share, if there are preferred dividends declared for the period, we must deduct them from net income to arrive at income available to the common stockholders. Chicago Cereal's earnings per share is shown in **Illustration 18.37**.

**ILLUSTRATION 18.37**
**Earnings per share**

| Ratio | Formula | Chicago Cereal 2020 | Chicago Cereal 2019 | Giant Mills 2020 | Industry Average |
|---|---|---|---|---|---|
| Earnings per share (EPS) | $\frac{\text{Net income} - \text{Preferred dividends}}{\text{Weighted-average common shares outstanding}}$ | $\frac{\$1{,}103 - \$0}{418.7} = \$2.63$ | $2.40 | $2.90 | na |

Note that no industry average is presented in Illustration 18.37. Industry data for earnings per share are not reported, and in fact the Chicago Cereal and Giant Mills ratios should not be compared. Such comparisons are not meaningful because of the wide variations in the number of shares of outstanding stock among companies. Chicago Cereal's earnings per share increased 23 cents per share in 2020. This represents a 9.6% increase from the 2019 EPS of $2.40.

15. **Price-earnings ratio.** The **price-earnings ratio** is an oft-quoted statistic that measures the ratio of the market price of each share of common stock to the earnings per share. The price-earnings (P-E) ratio reflects investors' assessments of a company's future earnings. It is computed by dividing the market price per share of the stock by earnings per share. Chicago Cereal's price-earnings ratio is shown in **Illustration 18.38**.

**ILLUSTRATION 18.38**
**Price-earnings ratio**

| Ratio | Formula | Chicago Cereal 2020 | Chicago Cereal 2019 | Giant Mills 2020 | Industry Average |
|---|---|---|---|---|---|
| Price-earnings ratio | $\frac{\text{Market price per share}}{\text{Earnings per share}}$ | $\frac{\$52.92}{\$2.63} = 20.1$ | 20.9 | 24.3 | 35.8 |

At the end of 2020 and 2019, the market price of Chicago Cereal's stock was $52.92 and $50.06, respectively.

In 2020, each share of Chicago Cereal's stock sold for 20.1 times the amount that was earned on each share. Chicago Cereal's price-earnings ratio is lower than Giant Mills' ratio of 24.3 and lower than the industry average of 35.8 times. Its lower P-E ratio suggests that the market is less optimistic about Chicago Cereal than about Giant Mills. However, it might also signal that Chicago Cereal's stock is underpriced.

16. **Payout ratio.** The **payout ratio** measures the percentage of earnings distributed in the form of cash dividends. It is computed by dividing cash dividends declared on common stock by net income. Companies that have high growth rates are characterized by low payout ratios because they reinvest most of their net income in the business. The payout ratio for Chicago Cereal is shown in **Illustration 18.39**.

The 2020 and 2019 payout ratios for Chicago Cereal are slightly lower than that of Giant Mills (54%) but higher than the industry average (37%).

Management has some control over the amount of dividends paid each year, and companies are generally reluctant to reduce a dividend below the amount paid in a previous year. Therefore, the payout ratio will actually increase if a company's net income

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**ILLUSTRATION 18.39**
**Payout ratio**

| Ratio | Formula | Chicago Cereal 2020 | Chicago Cereal 2019 | Giant Mills 2020 | Industry Average |
|---|---|---|---|---|---|
| Payout ratio | Cash dividends declared on common stock / Net income | $475 / $1,103 = 43% | 45% | 54% | 37% |

declines but the company keeps its total dividend payment the same. Of course, unless the company returns to its previous level of profitability, maintaining this higher dividend payout ratio is probably not possible over the long run.

Before drawing any conclusions regarding Chicago Cereal's dividend payout ratio, we should calculate this ratio over a longer period of time to evaluate any trends and also try to find out whether management's philosophy regarding dividends has changed recently. The "Selected Financial Data" section of Chicago Cereal's Management Discussion and Analysis shows that over a 5-year period, earnings per share rose 45%, while dividends per share grew only 19%.

In terms of the types of financial information available and the ratios used by various industries, what can be practically covered in this textbook gives you only the "Titanic approach." That is, you are seeing only the tip of the iceberg compared to the vast databases and types of ratio analysis that are available on computers. The availability of information is not a problem. The real trick is to be discriminating enough to perform relevant analysis and select pertinent comparative data.

## DO IT! 3 | Ratio Analysis

The condensed financial statements of John Cully Company, for the years ended June 30, 2020 and 2019, are presented as follows.

**John Cully Company**
**Balance Sheets**
**June 30**

| | (in thousands) 2020 | 2019 |
|---|---|---|
| **Assets** | | |
| Current assets | | |
| Cash and cash equivalents | $ 553.3 | $ 611.6 |
| Accounts receivable (net) | 776.6 | 664.9 |
| Inventory | 768.3 | 653.5 |
| Prepaid expenses and other current assets | 204.4 | 269.2 |
| Total current assets | 2,302.6 | 2,199.2 |
| Investments | 12.3 | 12.6 |
| Property, plant, and equipment (net) | 694.2 | 647.0 |
| Intangibles and other assets | 876.7 | 849.3 |
| Total assets | $3,885.8 | $3,708.1 |
| **Liabilities and Stockholders' Equity** | | |
| Current liabilities | $1,497.7 | $1,322.0 |
| Long-term liabilities | 679.5 | 637.1 |
| Stockholders' equity—common | 1,708.6 | 1,749.0 |
| Total liabilities and stockholders' equity | $3,885.8 | $3,708.1 |

**ACTION PLAN**

- Remember that the current ratio includes all current assets.
- Use average balances for turnover ratios like inventory, accounts receivable, and return on assets.

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**John Cully Company**
**Income Statements**
**For the Years Ended June 30**

| | (in thousands) | |
|---|---|---|
| | **2020** | **2019** |
| Sales revenue | $6,336.3 | $5,790.4 |
| Costs and expenses | | |
| Cost of goods sold | 1,617.4 | 1,476.3 |
| Selling and administrative expenses | 4,007.6 | 3,679.0 |
| Interest expense | 13.9 | 27.1 |
| Total costs and expenses | 5,638.9 | 5,182.4 |
| Income before income taxes | 697.4 | 608.0 |
| Income tax expense | 291.3 | 232.6 |
| Net income | $ 406.1 | $ 375.4 |

Compute the following ratios for 2020 and 2019.

**a.** Current ratio.

**b.** Inventory turnover. (Inventory on 6/30/18 was $599.0.)

**c.** Profit margin.

**d.** Return on assets. (Assets on 6/30/18 were $3,349.9.)

**e.** Return on common stockholders' equity. (Stockholders' equity on 6/30/18 was $1,795.9.)

**f.** Debt to assets ratio.

**g.** Times interest earned.

**Solution**

| | **2020** | **2019** |
|---|---|---|
| **a.** Current ratio: | | |
| $2,302.6 ÷ $1,497.7 = | 1.5:1 | |
| $2,199.2 ÷ $1,322.0 = | | 1.7:1 |
| **b.** Inventory turnover: | | |
| $1,617.4 ÷ [($768.3 + $653.5) ÷ 2] = | 2.3 times | |
| $1,476.3 ÷ [($653.5 + $599.0) ÷ 2] = | | 2.4 times |
| **c.** Profit margin: | | |
| $406.1 ÷ $6,336.3 = | 6.4% | |
| $375.4 ÷ $5,790.4 = | | 6.5% |
| **d.** Return on assets: | | |
| $406.1 ÷ [($3,885.8 + $3,708.1) ÷ 2] = | 10.7% | |
| $375.4 ÷ [($3,708.1 + $3,349.9) ÷ 2] = | | 10.6% |
| **e.** Return on common stockholders' equity: | | |
| ($406.1 – $0) ÷ [($1,708.6 + $1,749.0) ÷ 2] = | 23.5% | |
| ($375.4 – $0) ÷ [($1,749.0 + $1,795.9) ÷ 2] = | | 21.2% |
| **f.** Debt to assets ratio: | | |
| ($1,497.7 + $679.5) ÷ $3,885.8 = | 56.0% | |
| ($1,322.0 + $637.1) ÷ $3,708.1 = | | 52.8% |
| **g.** Times interest earned: | | |
| ($406.1 + $13.9 + $291.3) ÷ $13.9 = | 51.2 times | |
| ($375.4 + $27.1 + $232.6) ÷ $27.1 = | | 23.4 times |

Related exercise material: **BE18.10, BE18.11, BE18.12, BE18.13, BE18.14, BE18.15, DO IT! 18.3, E18.7, E18.8, E18.9, E18.10, E18.11, E18.12, and E18.13.**

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# Review and Practice

## Learning Objectives Review

### 1 Apply the concepts of sustainable income and quality of earnings.

Sustainable income analysis is useful in evaluating a company's performance. Sustainable income is the most likely level of income to be obtained by the company in the future. Discontinued operations and other comprehensive income are presented separately to highlight their unusual nature. Items below income from continuing operations must be presented net of tax.

A high quality of earnings provides full and transparent information that will not confuse or mislead users of the financial statements. Issues related to quality of earnings are (1) alternative accounting methods, (2) pro forma income, and (3) improper recognition.

### 2 Apply horizontal analysis and vertical analysis.

Horizontal analysis is a technique for evaluating a series of data over a period of time to determine the increase or decrease that has taken place, expressed as either a dollar amount or a percentage.

Vertical analysis is a technique that expresses each item in a financial statement as a percentage of a relevant total or a base amount.

### 3 Analyze a company's performance using ratio analysis.

Financial ratios as provided in Illustration 18.15 (liquidity), Illustration 18.16 (solvency), and Illustration 18.17 (profitability) are used to provide clues to the underlying conditions of a company. Analysis is enhanced by intracompany, intercompany, and industry comparisons of these three classes of ratios.

## Glossary Review

**Accounts receivable turnover** A measure of the liquidity of receivables; computed as net credit sales divided by average net accounts receivable. (p. 18-19).

**Asset turnover** A measure of how efficiently a company uses its assets to generate sales; computed as net sales divided by average total assets. (p. 18-24).

**Available-for-sale securities** Securities that are held with the intent of selling them sometime in the future. (p. 18-5).

**Average collection period** The average number of days that receivables are outstanding; calculated as accounts receivable turnover divided into 365 days. (p. 18-20).

**Change in accounting principle** Use of an accounting principle in the current year different from the one used in the preceding year. (p. 18-6).

**Comprehensive income** The sum of net income and other comprehensive income items. (p. 18-5).

**Current ratio** A measure used to evaluate a company's liquidity and short-term debt-paying ability; calculated as current assets divided by current liabilities. (p. 18-19).

**Days in inventory** A measure of the average number of days inventory is held; computed as inventory turnover divided into 365 days. (p. 18-21).

**Debt to assets ratio** A measure of the percentage of total financing provided by creditors; computed as total liabilities divided by total assets. (p. 18-21).

**Discontinued operations** The disposal of a significant component of a business. (p. 18-4).

**Earnings per share** The net income earned by each share of common stock; computed as net income less preferred dividends divided by the weighted-average common shares outstanding. (p. 18-25).

**Free cash flow** A measure of solvency. Cash remaining from operating activities after adjusting for capital expenditures and dividends paid. (p. 18-22).

**Gross profit rate** Gross profit expressed as a percentage of sales; computed as gross profit divided by net sales. (p. 18-25).

**Horizontal analysis** A technique for evaluating a series of financial statement data over a period of time to determine the increase (decrease) that has taken place, expressed as either a dollar amount or a percentage. (p. 18-10).

**Inventory turnover** A measure of the liquidity of inventory. Measures the number of times average inventory was sold during the period; computed as cost of goods sold divided by average inventory. (p. 18-20).

**Leveraging** Borrowing money at a lower rate of interest than can be earned by using the borrowed money; also referred to as *trading on the equity*. (p. 18-24).

**Liquidity ratios** Measures of the short-term ability of the company to pay its maturing obligations and to meet unexpected needs for cash. (p. 18-15).

**Payout ratio** A measure of the percentage of earnings distributed in the form of cash dividends; calculated as cash dividends declared on common stock divided by net income. (p. 18-26).

**Price-earnings (P-E) ratio** A comparison of the market price of each share of common stock to the earnings per share; computed as the market price per share of the stock divided by earnings per share. (p. 18-26).

**Profitability ratios** Measures of the income or operating success of a company for a given period of time. (p. 18-16).

**Profit margin** A measure of the net income generated by each dollar of sales; computed as net income divided by net sales. (p. 18-24).

**Pro forma income** A measure of income that usually excludes items that a company thinks are unusual or non-recurring. (p. 18-8).

**Quality of earnings** Indicates the level of full and transparent information that is provided to users of the financial statements. (p. 18-7).

**Ratio** An expression of the mathematical relationship between one quantity and another. The relationship may be expressed either as a percentage, a rate, or a simple proportion. (p. 18-14).

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**Ratio analysis** A technique for evaluating financial statements that expresses the relationship between selected financial statement data. (p. 18-14).

**Return on assets** A profitability measure that indicates the amount of net income generated by each dollar of assets; calculated as net income divided by average total assets. (p. 18-24).

**Return on common stockholders' equity (ROE)** A measure of the dollars of net income earned for each dollar invested by the owners; computed as income available to common stockholders divided by average common stockholders' equity. (p. 18-23).

**Solvency ratios** Measures of the ability of a company to survive over a long period of time, particularly to pay interest as it comes due and to repay the balance of debt at its maturity. (p. 18-16).

**Sustainable income** The most likely level of income to be obtained by a company in the future. (p. 18-3).

**Times interest earned** A measure of a company's solvency and ability to meet interest payments as they come due; calculated as the sum of net income, interest expense, and income tax expense divided by interest expense. (p. 18-22).

**Trading on the equity** *See leveraging*. (p. 18-24).

**Trading securities** Securities bought and held primarily for sale in the near term to generate income on short-term price differences. (p. 18-5).

**Vertical analysis** A technique for evaluating financial statement data that expresses each item in a financial statement as a percentage of a base amount. (p. 18-12).

## Practice Multiple-Choice Questions

**1. (LO 1)** In reporting discontinued operations, the income statement should show in a special section:

**a.** gains on the disposal of the discontinued component.

**b.** losses on the disposal of the discontinued component.

**c.** Neither (a) nor (b).

**d.** Both (a) and (b).

**2. (LO 1)** Cool Stools Corporation has income before taxes of $400,000 and a loss on discontinued operations of $100,000. If the income tax rate is 25% on all items, the statement of comprehensive income should show income from continuing operations and discontinued operations, respectively, of

**a.** $325,000 and $100,000.

**b.** $325,000 and $75,000.

**c.** $300,000 and $100,000.

**d.** $300,000 and $75,000.

**3. (LO 1)** Which of the following would be considered an "Other comprehensive income" item?

**a.** Gain on disposal of discontinued operations.

**b.** Unrealized loss on available-for-sale securities.

**c.** Loss related to flood.

**d.** Net income.

**4. (LO 1)** Which situation below might indicate a company has a low quality of earnings?

**a.** The same accounting principles are used each year.

**b.** Revenue is recognized when the performance obligation is satisfied.

**c.** Maintenance costs are capitalized and then depreciated.

**d.** The company's P-E ratio is high relative to competitors.

**5. (LO 2)** In horizontal analysis, each item is expressed as a percentage of the:

**a.** net income amount.

**b.** stockholders' equity amount.

**c.** total assets amount.

**d.** base-year amount.

**6. (LO 2)** Adams Corporation reported net sales of $300,000, $330,000, and $360,000 in the years 2018, 2019, and 2020, respectively. If 2018 is the base year, what percentage do 2020 sales represent of the base?

**a.** 77%.

**b.** 108%.

**c.** 120%.

**d.** 130%.

**7. (LO 2)** The following schedule is a display of what type of analysis?

| | Amount | Percent |
|---|---|---|
| Current assets | $200,000 | 25% |
| Property, plant, and equipment | 600,000 | 75% |
| Total assets | $800,000 | |

**a.** Horizontal analysis.

**b.** Differential analysis.

**c.** Vertical analysis.

**d.** Ratio analysis.

**8. (LO 2)** In vertical analysis, the base amount for depreciation expense is generally:

**a.** net sales.

**b.** depreciation expense in a previous year.

**c.** gross profit.

**d.** fixed assets.

**9. (LO 3)** Which measure is an evaluation of a company's ability to pay current liabilities?

**a.** Accounts receivable turnover.

**b.** Current ratio.

**c.** Both (a) and (b).

**d.** None of the above.

**10. (LO 3)** Which measure is useful in evaluating the efficiency in managing inventories?

**a.** Inventory turnover.

**b.** Days in inventory.

**c.** Both (a) and (b).

**d.** None of the above.

**11. (LO 3)** Which of these is **not** a liquidity ratio?

**a.** Current ratio.

**b.** Asset turnover.

**c.** Inventory turnover.

**d.** Accounts receivable turnover.

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**12.** **(LO 3)** Plano Corporation reported net income $24,000, net sales $400,000, and average assets $600,000 for 2020. What is the 2020 profit margin?

**a.** 6%. **c.** 40%.
**b.** 12%. **d.** 200%.

Use the following financial statement information as of the end of each year to answer Questions 13–17.

| | 2020 | 2019 |
|---|---|---|
| Inventory | $ 54,000 | $ 48,000 |
| Current assets | 81,000 | 106,000 |
| Total assets | 382,000 | 326,000 |
| Current liabilities | 27,000 | 36,000 |
| Total liabilities | 102,000 | 88,000 |
| Common stockholders' equity | 240,000 | 198,000 |
| Net sales | 784,000 | 697,000 |
| Cost of goods sold | 306,000 | 277,000 |
| Net income | 134,000 | 90,000 |
| Income tax expense | 22,000 | 18,000 |
| Interest expense | 12,000 | 12,000 |
| Dividends paid to preferred stockholders | 4,000 | 4,000 |
| Dividends paid to common stockholders | 15,000 | 10,000 |

**13.** **(LO 3)** Compute the days in inventory for 2020.

**a.** 64.4 days. **c.** 6 days.
**b.** 60.8 days. **d.** 24 days.

**14.** **(LO 3)** Compute the current ratio for 2020.

**a.** 1.26:1. **c.** 0.80:1.
**b.** 3.0:1. **d.** 3.75:1.

**15.** **(LO 3)** Compute the profit margin for 2020.

**a.** 17.1%. **c.** 37.9%.
**b.** 18.1%. **d.** 5.9%.

**16.** **(LO 3)** Compute the return on common stockholders' equity for 2020.

**a.** 54.2%. **c.** 61.2%.
**b.** 52.5%. **d.** 59.4%.

**17.** **(LO 3)** Compute the times interest earned for 2020.

**a.** 11.2 times. **c.** 14.0 times.
**b.** 65.3 times. **d.** 13.0 times.

## Solutions

**1. d.** Gains and losses from the operations of a discontinued segment and gains and losses on the disposal of the discontinued segment are shown in a separate section immediately after continuing operations in the income statement. Choices (a) and (b) are correct, but (d) is the better answer. Choice (c) is wrong as both (a) and (b) are correct.

**2. d.** Income tax expense = 25% × $400,000 = $100,000; therefore, income from continuing operations = $400,000 − $100,000 = $300,000. The loss on discontinued operations is shown net of tax, $100,000 × 75% = $75,000. The other choices are therefore incorrect.

**3. b.** Unrealized gains and losses on available-for-sale securities are part of other comprehensive income. The other choices are incorrect because (a) a gain on the disposal of discontinued operations is reported as an unusual item, (c) loss related to a flood is reported among other expenses and losses, and (d) net income is a separate line item.

**4. c.** Capitalizing and then depreciating maintenance costs suggests that a company is trying to avoid expensing certain costs by deferring them to future accounting periods to increase current-period income. The other choices are incorrect because (a) using the same accounting principles each year and (b) recognizing revenue when the performance obligation is satisfied is in accordance with GAAP. Choice (d) is incorrect because a high P-E ratio does not suggest that a firm has low quality of earnings.

**5. d.** Horizontal analysis converts each succeeding year's balance to a percentage of the base year amount, not (a) net income amount, (b) stockholders' equity amount, or (c) total assets amount.

**6. c.** The trend percentage for 2020 is 120% ($360,000/$300,000), not (a) 77%, (b) 108%, or (d) 130%.

**7. c.** The data in the schedule is a display of vertical analysis because the individual asset items are expressed as a percentage of total assets. The other choices are therefore incorrect. Horizontal analysis is a technique for evaluating a series of data over a period of time.

**8. a.** In vertical analysis, net sales is used as the base amount for income statement items, not (b) depreciation expense in a previous year, (c) gross profit, or (d) fixed assets.

**9. c.** Both the accounts receivable turnover and the current ratio measure a firm's ability to pay current liabilities. Choices (a) and (b) are correct but (c) is the better answer. Choice (d) is incorrect because both (a) and (b) are correct.

**10. c.** Both inventory turnover and days in inventory measure a firm's efficiency in managing inventories. Choices (a) and (b) are correct but (c) is the better answer. Choice (d) is incorrect because both (a) and (b) are correct.

**11. b.** Asset turnover is a measure of profitability. The other choices are incorrect because the (a) current ratio, (c) inventory turnover, and (d) accounts receivable turnover are all measures of a firm's liquidity.

**12. a.** Profit margin = Net income ($24,000) ÷ Net sales ($400,000) = 6%, not (b) 12%, (c) 40%, or (d) 200%.

**13. b.** Inventory turnover = Cost of goods sold/Average inventory {$306,000/[($54,000 + $48,000)/2]} = 6 times. Thus, days in inventory = 60.8 (365/6), not (a) 64.4, (c) 6, or (d) 24 days.

**14. b.** Current ratio = Current assets/Current liabilities ($81,000/$27,000) = 3.0:1, not (a) 1.26:1, (c) 0.80:1, or (d) 3.75:1.

**15. a.** Profit margin = Net income/Net sales ($134,000/$784,000) = 17.1%, not (b) 18.1%, (c) 37.9%, or (d) 5.9%.

**16. d.** Return on common stockholders' equity = Net income ($134,000) − Dividends to preferred stockholders ($4,000)/Average common stockholders' equity [($240,000 + $198,000)/2] = 59.4%, not (a) 54.2%, (b) 52.5%, or (c) 61.2%.

**17. c.** Times interest earned = Net income + Interest expense + Income tax expense divided by Interest expense [($134,000 + $12,000 + $22,000)/$12,000] = 14.0 times, not (a) 11.2, (b) 65.3, or (d) 13.0 times.

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## Practice Brief Exercises

*Prepare a discontinued operations section.*

**1. (LO 1)** **Financial Statement** On September 30, Reynaldo Corporation discontinued its operations in Africa. During the year, the operating gain was $100,000 before taxes. On September 1, Reynaldo disposed of its African facilities at a pretax loss of $350.000. The applicable tax rate is 30%. Show the discontinued operations section of the statement of comprehensive income.

### Solution

**1.**

**Reynaldo Corporation**
**Partial Income Statement**

| | | |
|---|---|---|
| Gain from operations of discontinued division, net of $30,000 income taxes ($100,000 × 30%) | $ 30,000 | |
| Loss from disposal of discontinued division, net of $105,000 income tax saving ($350,000 × 30%) | (245,000) | $(215,000) |

*Prepare horizontal analysis.*

**2. (LO 2)** Using the following data from the comparative balance sheet of Alfredo Company, perform horizontal analysis.

| | December 31, 2020 | December 31, 2019 |
|---|---|---|
| Accounts payable | $ 300,000 | $ 200,000 |
| Common stock | 700,000 | 600,000 |
| Total liabilities and equity | 2,000,000 | 1,800,000 |

### Solution

**2.**

| | | | Increase or (Decrease) | |
|---|---|---|---|---|
| | December 31, 2020 | December 31, 2019 | Amount | Percent* |
| Accounts payable | $ 300,000 | $ 200,000 | $100,000 | 50% |
| Common stock | 700,000 | 600,000 | 100,000 | 17 |
| Total liabilities and stockholders' equity | 2,000,000 | 1,800,000 | 200,000 | 11 |

*100/200 = 50%; 100/600 = 16.7%; 200/1,800 = 11.1%

*Calculate ratios.*

**3. (LO 2)** Gonzalez Company has beginning inventory of $400,000, cost of goods sold of $2,200,000, and days in inventory of 73. What is Gonzalez' inventory turnover and ending inventory?

### Solution

**3.** Days in inventory = 365/Inventory turnover
73 = 365/Inventory turnover.
Inventory turnover = 5 (365/73)

Inventory turnover = Cost of goods sold/Average inventory
5 = $2,200,000/Average inventory
Average inventory = $2,200,000/5 = $440,000.

Since beginning inventory is $400,000, ending inventory must be $480,000: ($400,000 + $480,000)/2 = $440,000.

## Practice Exercises

*Prepare horizontal and vertical analysis.*

**1. (LO 2)** The comparative condensed balance sheets of Roadway Corporation are presented below.

**Roadway Corporation**
**Condensed Balance Sheets**
**December 31**

| Assets | 2020 | 2019 |
|---|---|---|
| Current assets | $ 76,000 | $ 80,000 |
| Property, plant, and equipment (net) | 99,000 | 90,000 |
| Intangibles | 25,000 | 40,000 |
| Total assets | $200,000 | $210,000 |

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| Liabilities and Stockholders' Equity | 2020 | 2019 |
|---|---|---|
| Current liabilities | $ 40,800 | $ 48,000 |
| Long-term liabilities | 143,000 | 150,000 |
| Stockholders' equity | 16,200 | 12,000 |
| Total liabilities and stockholders' equity | $200,000 | $210,000 |

## Instructions

**a.** Prepare a horizontal analysis of the balance sheet data for Roadway Corporation using 2019 as a base.

**b.** Prepare a vertical analysis of the balance sheet data for Roadway Corporation in columnar form for 2020.

## Solution

**1. a.**

**Roadway Corporation**
**Condensed Balance Sheets**
**December 31**

| | 2020 | 2019 | Increase (Decrease) | Percent Change from 2019 |
|---|---|---|---|---|
| **Assets** | | | | |
| Current assets | $ 76,000 | $ 80,000 | $ (4,000) | (5.0%) |
| Property, plant, and equipment (net) | 99,000 | 90,000 | 9,000 | 10.0% |
| Intangibles | 25,000 | 40,000 | (15,000) | (37.5%) |
| Total assets | $200,000 | $210,000 | $(10,000) | (4.8%) |
| **Liabilities and Stockholders' Equity** | | | | |
| Current liabilities | $ 40,800 | $ 48,000 | $ (7,200) | (15.0%) |
| Long-term liabilities | 143,000 | 150,000 | (7,000) | (4.7%) |
| Stockholders' equity | 16,200 | 12,000 | 4,200 | 35.0% |
| Total liabilities and stockholders' equity | $200,000 | $210,000 | $(10,000) | (4.8%) |

**b.**

**Roadway Corporation**
**Condensed Balance Sheet**
**December 31, 2020**

| | Amount | Percent |
|---|---|---|
| **Assets** | | |
| Current assets | $ 76,000 | 38.0% |
| Property, plant, and equipment (net) | 99,000 | 49.5% |
| Intangibles | 25,000 | 12.5% |
| Total assets | $200,000 | 100.0% |
| **Liabilities and Stockholders' Equity** | | |
| Current liabilities | $ 40,800 | 20.4% |
| Long-term liabilities | 143,000 | 71.5% |
| Stockholders' equity | 16,200 | 8.1% |
| Total liabilities and stockholders' equity | $200,000 | 100.0% |

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*Compute ratios.*

**2. (LO 3)** Rondo Corporation's comparative balance sheets are presented below.

**Rondo Corporation**
**Balance Sheets**
**December 31**

| | 2020 | 2019 |
|---|---|---|
| Cash | $ 5,300 | $ 3,700 |
| Accounts receivable | 21,200 | 23,400 |
| Inventory | 9,000 | 7,000 |
| Land | 20,000 | 26,000 |
| Buildings | 70,000 | 70,000 |
| Accumulated depreciation—buildings | (15,000) | (10,000) |
| Total | $110,500 | $120,100 |
| Accounts payable | $ 10,370 | $ 31,100 |
| Common stock | 75,000 | 69,000 |
| Retained earnings | 25,130 | 20,000 |
| Total | $110,500 | $120,100 |

Rondo's 2020 income statement included net sales of $120,000, cost of goods sold of $70,000, and net income of $14,000.

### Instructions

Compute the following ratios for 2020.

**a.** Current ratio.
**b.** Accounts receivable turnover.
**c.** Inventory turnover.
**d.** Profit margin.
**e.** Asset turnover.
**f.** Return on assets.
**g.** Return on common stockholders' equity.
**h.** Debt to assets ratio.

### Solution

**2. a.** ($5,300 + $21,200 + $9,000)/$10,370 = 3.42 times
**b.** $120,000/[($21,200 + $23,400)/2] = 5.38 times
**c.** $70,000/[($9,000 + $7,000)/2] = 8.8 times
**d.** $14,000/$120,000 = 11.7%
**e.** $120,000/[($110,500 + $120,100)/2] = 1.04 times
**f.** $14,000/[($110,500 + $120,100)/2] = 12.1%
**g.** $14,000/{[($75,000 + $25,130) + ($69,000 + $20,000)]/2} = 14.8%
**h.** $10,370/$110,500 = 9.4%

## Practice Problem

*Prepare a statement of comprehensive income.*

**(LO 1)** **Financial Statement** The events and transactions of Dever Corporation for the year ending December 31, 2020, resulted in the following data.

| | |
|---|---|
| Cost of goods sold | $2,600,000 |
| Net sales | 4,400,000 |
| Other expenses and losses | 9,600 |
| Other revenues and gains | 5,600 |
| Selling and administrative expenses | 1,100,000 |
| Income from operations of plastics division | 70,000 |
| Gain from disposal of plastics division | 500,000 |
| Unrealized loss on available-for-sale securities | 60,000 |

Analysis reveals the following:

1. All items are before the applicable income tax rate of 30%.
2. The plastics division was sold on July 1.
3. All operating data for the plastics division have been segregated.

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**Instructions**

Prepare a statement of comprehensive income for the year.

**Solution**

| Dever Corporation<br>Statement of Comprehensive Income<br>For the Year Ended December 31, 2020 | | |
|---|---|---|
| Net sales | | $4,400,000 |
| Cost of goods sold | | 2,600,000 |
| Gross profit | | 1,800,000 |
| Selling and administrative expenses | | 1,100,000 |
| Income from operations | | 700,000 |
| Other revenues and gains | | 5,600 |
| Other expenses and losses | | 9,600 |
| Income before income taxes | | 696,000 |
| Income tax expense ($696,000 × 30%) | | 208,800 |
| Income from continuing operations | | 487,200 |
| Discontinued operations | | |
| Income from operation of plastics division, net of $21,000 income taxes ($70,000 × 30%) | 49,000 | |
| Gain from disposal of plastics division, net of $150,000 income taxes ($500,000 × 30%) | 350,000 | 399,000 |
| Net income | | 886,200 |
| Unrealized loss on available-for-sale securities, net of $18,000 income tax savings ($60,000 × 30%) | | 42,000 |
| Comprehensive income | | $ 844,200 |

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

## Questions

1. Explain sustainable income. What relationship does this concept have to the treatment of discontinued operations on the income statement?

2. Hogan Inc. reported 2019 earnings per share of $3.26 and had no discontinued operations. In 2020, earnings per share on income from continuing operations was $2.99, and earnings per share on net income was $3.49. Do you consider this trend to be favorable? Why or why not?

3. Moosier Inc. has been in operation for 3 years and uses the FIFO method of pricing inventory. During the fourth year, Moosier changes to the average-cost method for all its inventory. How will Moosier report this change?

4. What amount did **Apple** report as "Other comprehensive income (loss)" in its consolidated statement of comprehensive income ending September 26, 2015? By what percentage did Apple's "Comprehensive income" differ from its "Net income"?

5. Identify and explain factors that affect quality of earnings.

6. Explain how the choice of one of the following accounting methods over the other raises or lowers a company's net income during a period of continuing inflation.

   **a.** Use of FIFO instead of LIFO for inventory costing.

   **b.** Use of a 6-year life for machinery instead of a 9-year life.

   **c.** Use of straight-line depreciation instead of declining-balance depreciation.

7. Two popular methods of financial statement analysis are horizontal analysis and vertical analysis. Explain the difference between these two methods.

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8. **a.** If Erin Company had net income of $300,000 in 2019 and it experienced a 24.5% increase in net income for 2020, what is its net income for 2020?

   **b.** If 6 cents of every dollar of Erin's revenue is net income in 2019, what is the dollar amount of 2019 revenue?

9. **a.** Gina Jaimes believes that the analysis of financial statements is directed at two characteristics of a company: liquidity and profitability. Is Gina correct? Explain.

   **b.** Are short-term creditors, long-term creditors, and stockholders interested in primarily the same characteristics of a company? Explain.

10. **a.** Distinguish among the following bases of comparison: intracompany, intercompany, and industry averages.

    **b.** Give the principal value of using each of the three bases of comparison.

11. Name the major ratios useful in assessing (a) liquidity and (b) solvency.

12. Vern Thoms is puzzled. His company had a profit margin of 10% in 2020. He feels that this is an indication that the company is doing well. Tina Amos, his accountant, says that more information is needed to determine the company's financial well-being. Who is correct? Why?

13. What does each type of ratio measure?

    **a.** Liquidity ratios.

    **b.** Solvency ratios.

    **c.** Profitability ratios.

14. What is the difference between the current ratio and working capital?

15. Handi Mart, a retail store, has an accounts receivable turnover of 4.5 times. The industry average is 12.5 times. Does Handi Mart have a collection problem with its receivables?

16. Which ratios should be used to help answer each of these questions?

    **a.** How efficient is a company in using its assets to produce sales?

    **b.** How near to sale is the inventory on hand?

    **c.** How many dollars of net income were earned for each dollar invested by the owners?

    **d.** How able is a company to meet interest charges as they fall due?

17. At year-end, the price-earnings ratio of **General Motors** was 11.3, and the price-earnings ratio of **Microsoft** was 28.14. Which company did the stock market favor? Explain.

18. What is the formula for computing the payout ratio? Do you expect this ratio to be high or low for a growth company?

19. Holding all other factors constant, indicate whether each of the following changes generally signals good or bad news about a company.

    **a.** Increase in profit margin.

    **b.** Decrease in inventory turnover.

    **c.** Increase in current ratio.

    **d.** Decrease in earnings per share.

    **e.** Increase in price-earnings ratio.

    **f.** Increase in debt to assets ratio.

    **g.** Decrease in times interest earned.

20. The return on assets for Ayala Corporation is 7.6%. During the same year, Ayala's return on common stockholders' equity is 12.8%. What is the explanation for the difference in the two rates?

21. Which two ratios do you think should be of greatest interest in each of the following cases?

    **a.** A pension fund considering the purchase of 20-year bonds.

    **b.** A bank contemplating a short-term loan to a customer.

    **c.** A common stockholder.

22. Keanu Inc. has net income of $200,000, average shares of common stock outstanding of 40,000, and preferred dividends for the period of $20,000. What is Keanu's earnings per share of common stock? Fred Tyme, the president of Keanu, believes that the computed EPS of the company is high. Comment.

## Brief Exercises

*Prepare a discontinued operations section.*

**BE18.1 (LO 1)** **Financial Statement** On June 30, Flores Corporation discontinued its operations in Mexico. On September 1, Flores disposed of the Mexico facility at a pretax loss of $640,000. The applicable tax rate is 25%. Show the discontinued operations section of Flores's statement of comprehensive income.

*Prepare statement of comprehensive income including unusual items.*

**BE18.2 (LO 1)** **Financial Statement** An inexperienced accountant for Silva Corporation showed the following in the income statement: income before income taxes $450,000 and unrealized gain on available-for-sale securities (before taxes) $70,000. The unrealized gain on available-for-sale securities and income before income taxes are both subject to a 25% tax rate. Prepare a correct statement of comprehensive income.

*Indicate how a change in accounting principle is reported.*

**BE18.3 (LO 1)** On January 1, 2020, Bryce Inc. changed from the LIFO method of inventory pricing to the FIFO method. Explain how this change in accounting principle should be treated in the company's financial statements.

*Prepare horizontal analysis.*

**BE18.4 (LO 2)** Using these data from the comparative balance sheet of Rollaird Company, perform horizontal analysis.

| | December 31, 2020 | December 31, 2019 |
|---|---|---|
| Accounts receivable | $ 460,000 | $ 400,000 |
| Inventory | 780,000 | 650,000 |
| Total assets | 3,164,000 | 2,800,000 |

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**BE18.5 (LO 2)** Using the data presented in BE18.4 for Rollaird Company, perform vertical analysis. *Prepare vertical analysis.*

**BE18.6 (LO 2)** Net income was $500,000 in 2018, $485,000 in 2019, and $518,400 in 2020. What is the percentage of change from (a) 2018 to 2019, and (b) from 2019 to 2020? Is the change an increase or a decrease? *Calculate percentage of change.*

**BE18.7 (LO 2)** If Coho Company had net income of $382,800 in 2020 and it experienced a 16% increase in net income over 2019, what was its 2019 net income? *Calculate net income.*

**BE18.8 (LO 2)** Vertical analysis (common-size) percentages for Palau Company's sales revenue, cost of goods sold, and expenses are as follows. *Analyze change in net income.*

| Vertical Analysis | 2020 | 2019 | 2018 |
|---|---|---|---|
| Sales revenue | 100.0% | 100.0% | 100.0% |
| Cost of goods sold | 60.5 | 62.9 | 64.8 |
| Expenses | 26.0 | 26.6 | 27.5 |

Did Palau's net income as a percent of sales increase, decrease, or remain unchanged over the 3-year period? Provide numerical support for your answer.

**BE18.9 (LO 2)** Writing Horizontal analysis (trend analysis) percentages for Phoenix Company's sales revenue, cost of goods sold, and expenses are listed here. *Analyze change in net income.*

| Horizontal Analysis | 2020 | 2019 | 2018 |
|---|---|---|---|
| Sales revenue | 96.2% | 104.8% | 100.0% |
| Cost of goods sold | 101.0 | 98.0 | 100.0 |
| Expenses | 105.6 | 95.4 | 100.0 |

Explain whether Phoenix's net income increased, decreased, or remained unchanged over the 3-year period.

**BE18.10 (LO 3)** Writing Suppose these selected condensed data are taken from recent balance sheets of **Bob Evans Farms** (in thousands). *Calculate current ratio.*

| | 2020 | 2019 |
|---|---|---|
| Cash | $ 13,606 | $ 7,669 |
| Accounts receivable | 23,045 | 19,951 |
| Inventory | 31,087 | 31,345 |
| Other current assets | 12,522 | 11,909 |
| Total current assets | $ 80,260 | $ 70,874 |
| Total current liabilities | $245,805 | $326,203 |

Compute the current ratio for each year and comment on your results.

**BE18.11 (LO 3)** Writing The following data are taken from the financial statements of Colby Company. *Evaluate collection of accounts receivable.*

| | 2020 | 2019 |
|---|---|---|
| Accounts receivable (net), end of year | $ 550,000 | $ 540,000 |
| Net sales on account | 4,300,000 | 4,000,000 |
| Terms for all sales are 1/10, n/45 | | |

**a.** Compute for each year (1) the accounts receivable turnover and (2) the average collection period. At the end of 2018, accounts receivable was $520,000.

**b.** What conclusions about the management of accounts receivable can be drawn from these data?

**BE18.12 (LO 3)** Writing The following data were taken from the income statements of Mydorf Company. *Evaluate management of inventory.*

| | 2020 | 2019 |
|---|---|---|
| Sales revenue | $6,420,000 | $6,240,000 |
| Beginning inventory | 960,000 | 840,000 |
| Purchases | 4,840,000 | 4,661,000 |
| Ending inventory | 1,020,000 | 960,000 |

**a.** Compute for each year (1) the inventory turnover and (2) days in inventory.

**b.** What conclusions concerning the management of the inventory can be drawn from these data?

**BE18.13 (LO 3)** Writing **Staples, Inc.** is one of the largest suppliers of office products in the United States. Suppose it had net income of $738.7 million and sales of $24,275.5 million in 2020. Its total assets were $13,073.1 million at the beginning of the year and $13,717.3 million at the end of the year. *Calculate profitability ratios.*

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What is Staples, Inc.'s (a) asset turnover and (b) profit margin? (Round to two decimals.) Provide a brief interpretation of your results.

*Calculate profitability ratios.*

**BE18.14 (LO 3)** Hollie Company has stockholders' equity of $400,000 and net income of $72,000. It has a payout ratio of 18% and a return on assets of 20%. How much did Hollie pay in cash dividends, and what were its average total assets?

*Calculate and analyze free cash flow.*

**BE18.15 (LO 3)** **Writing** Selected data taken from a recent year's financial statements of trading card company **Topps Company, Inc.** are as follows (in millions).

| | |
|---|---|
| Net sales | $326.7 |
| Current liabilities, beginning of year | 41.1 |
| Current liabilities, end of year | 62.4 |
| Net cash provided by operating activities | 10.4 |
| Total liabilities, beginning of year | 65.2 |
| Total liabilities, end of year | 73.2 |
| Capital expenditures | 3.7 |
| Cash dividends | 6.2 |

Compute the free cash flow. Provide a brief interpretation of your results.

## DO IT! Exercises

*Prepare statement of comprehensive income including unusual items.*

**DO IT! 18.1 (LO 1)** **Financial Statement** In its proposed 2020 income statement, Hrabik Corporation reports income before income taxes $500,000, income taxes $100,000 (not including unusual items), loss on operation of discontinued music division $60,000, gain on disposal of discontinued music division $40,000, and unrealized loss on available-for-sale securities $150,000. The income tax rate is 20%. Prepare a correct statement of comprehensive income, beginning with income before income taxes.

*Prepare horizontal analysis.*

**DO IT! 18.2 (LO 2)** Summary financial information for Gandaulf Company is as follows.

| | Dec. 31, 2020 | Dec. 31, 2019 |
|---|---|---|
| Current assets | $ 200,000 | $ 220,000 |
| Plant assets | 1,040,000 | 780,000 |
| Total assets | $1,240,000 | $1,000,000 |

Compute the amount and percentage changes in 2020 using horizontal analysis, assuming 2019 is the base year.

*Compute ratios.*

**DO IT! 18.3 (LO 3)** The condensed financial statements of Murawski Company for the years 2019 and 2020 are presented as follows. (Amounts in thousands.)

**Murawski Company**
**Balance Sheets**
**December 31**

| | 2020 | 2019 |
|---|---|---|
| Current assets | | |
| Cash and cash equivalents | $ 330 | $ 360 |
| Accounts receivable (net) | 470 | 400 |
| Inventory | 460 | 390 |
| Prepaid expenses | 120 | 160 |
| Total current assets | 1,380 | 1,310 |
| Investments | 10 | 10 |
| Property, plant, and equipment | 420 | 380 |
| Intangibles and other assets | 530 | 510 |
| Total assets | $2,340 | $2,210 |
| Current liabilities | $ 900 | $ 790 |
| Long-term liabilities | 410 | 380 |
| Stockholders' equity—common | 1,030 | 1,040 |
| Total liabilities and stockholders' equity | $2,340 | $2,210 |

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**Murawski Company**
**Income Statements**
**For the Years Ended December 31**

| | 2020 | 2019 |
|---|---|---|
| Sales revenue | $3,800 | $3,460 |
| Costs and expenses | | |
| Cost of goods sold | 955 | 890 |
| Selling & administrative expenses | 2,400 | 2,330 |
| Interest expense | 25 | 20 |
| Total costs and expenses | 3,380 | 3,240 |
| Income before income taxes | 420 | 220 |
| Income tax expense | 126 | 66 |
| Net income | $ 294 | $ 154 |

Compute the following ratios for 2020 and 2019.

**a.** Current ratio.
**b.** Inventory turnover. (Inventory on 12/31/18 was $340.)
**c.** Profit margin.
**d.** Return on assets. (Assets on 12/31/18 were $1,900.)
**e.** Return on common stockholders' equity. (Stockholders' equity on 12/31/18 was $900.)
**f.** Debt to assets ratio.
**g.** Times interest earned.

## Exercises

**E18.1 (LO 1)** Financial Statement Writing For its fiscal year ending October 31, 2020, Haas Corporation reports the following partial data shown below.

*Prepare a correct statement of comprehensive income.*

| | |
|---|---|
| Income before income taxes | $540,000 |
| Income tax expense (20% × $420,000) | 84,000 |
| Income from continuing operations | 456,000 |
| Loss on discontinued operations | 120,000 |
| Net income | $336,000 |

The loss on discontinued operations was comprised of a $50,000 loss from operations and a $70,000 loss from disposal. The income tax rate is 20% on all items.

### Instructions

**a.** Prepare a correct statement of comprehensive income beginning with income before income taxes.
**b.** Explain in memo form why the income statement data are misleading.

**E18.2 (LO 1)** Financial Statement Trayer Corporation has income from continuing operations of $290,000 for the year ended December 31, 2020. It also has the following items (before considering income taxes).

*Prepare statement of comprehensive income.*

1. An unrealized loss of $80,000 on available-for-sale securities.
2. A gain of $30,000 on the discontinuance of a division (comprised of a $10,000 loss from operations and a $40,000 gain on disposal).

Assume all items are subject to income taxes at a 20% tax rate.

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**Instructions**

Prepare a statement of comprehensive income, beginning with income from continuing operations.

*Prepare horizontal analysis.*

**E18.3 (LO 2)** Here is financial information for Glitter Inc.

| | December 31, 2020 | December 31, 2019 |
|---|---|---|
| Current assets | $106,000 | $ 90,000 |
| Plant assets (net) | 400,000 | 350,000 |
| Current liabilities | 99,000 | 65,000 |
| Long-term liabilities | 122,000 | 90,000 |
| Common stock, $1 par | 130,000 | 115,000 |
| Retained earnings | 155,000 | 170,000 |

**Instructions**

Prepare a schedule showing a horizontal analysis for 2020, using 2019 as the base year.

*Prepare vertical analysis.*

**E18.4 (LO 2)** Operating data for Joshua Corporation are presented below.

| | 2020 | 2019 |
|---|---|---|
| Sales revenue | $800,000 | $600,000 |
| Cost of goods sold | 520,000 | 408,000 |
| Selling expenses | 120,000 | 72,000 |
| Administrative expenses | 60,000 | 48,000 |
| Income tax expense | 30,000 | 24,000 |
| Net income | 70,000 | 48,000 |

**Instructions**

Prepare a schedule showing a vertical analysis for 2020 and 2019.

*Prepare horizontal and vertical analyses.*

**E18.5 (LO 2)** Suppose the comparative balance sheets of **Nike, Inc.** are presented here.

**Nike, Inc.**
**Comparative Balance Sheets**
**May 31**
**($ in millions)**

| **Assets** | 2020 | 2019 |
|---|---|---|
| Current assets | $ 9,734 | $ 8,839 |
| Property, plant, and equipment (net) | 1,958 | 1,891 |
| Other assets | 1,558 | 1,713 |
| Total assets | $13,250 | $12,443 |
| **Liabilities and Stockholders' Equity** | | |
| Current liabilities | $ 3,277 | $ 3,322 |
| Long-term liabilities | 1,280 | 1,296 |
| Stockholders' equity | 8,693 | 7,825 |
| Total liabilities and stockholders' equity | $13,250 | $12,443 |

**Instructions**

**a.** Prepare a horizontal analysis of the balance sheet data for Nike, using 2019 as a base. (Show the amount of increase or decrease as well.)

**b.** Prepare a vertical analysis of the balance sheet data for Nike for 2020.

*Prepare horizontal and vertical analyses.*

**E18.6 (LO 2)** Here are the comparative income statements of Delaney Corporation.

**Delaney Corporation**
**Comparative Income Statements**
**For the Years Ended December 31**

| | 2020 | 2019 |
|---|---|---|
| Net sales | $598,000 | $500,000 |
| Cost of goods sold | 477,000 | 420,000 |
| Gross profit | 121,000 | 80,000 |
| Operating expenses | 80,000 | 44,000 |
| Net income | $ 41,000 | $ 36,000 |

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### Instructions

**a.** Prepare a horizontal analysis of the income statement data for Delaney Corporation, using 2019 as a base. (Show the amounts of increase or decrease.)

**b.** Prepare a vertical analysis of the income statement data for Delaney Corporation for both years.

**E18.7 (LO 3) Nordstrom, Inc.** operates department stores in numerous states. Suppose selected financial statement data (in millions) for 2020 are presented below. *Compute liquidity ratios.*

| | End of Year | Beginning of Year |
|---|---|---|
| Cash and cash equivalents | $ 795 | $ 72 |
| Accounts receivable (net) | 2,035 | 1,942 |
| Inventory | 898 | 900 |
| Other current assets | 326 | 303 |
| Total current assets | $4,054 | $3,217 |
| Total current liabilities | $2,014 | $1,601 |

For the year, net credit sales were $8,258 million, cost of goods sold was $5,328 million, and net cash provided by operating activities was $1,251 million.

### Instructions

Compute the current ratio, accounts receivable turnover, average collection period, inventory turnover, and days in inventory at the end of the current year.

**E18.8 (LO 3)** Gwynn Incorporated had the following transactions involving current assets and current liabilities during February 2020. *Perform current ratio analysis.*

| | | |
|---|---|---|
| Feb. | 3 | Collected accounts receivable of $15,000. |
| | 7 | Purchased equipment for $23,000 cash. |
| | 11 | Paid $3,000 for a 1-year insurance policy. |
| | 14 | Paid accounts payable of $12,000. |
| | 18 | Declared cash dividends, $4,000. |

Additional information:

As of February 1, 2020, current assets were $120,000 and current liabilities were $40,000.

### Instructions

Compute the current ratio as of the beginning of the month and after each transaction.

**E18.9 (LO 3)** Lendell Company has these comparative balance sheet data: *Compute selected ratios.*

**Lendell Company**
**Balance Sheets**
**December 31**

| | 2020 | 2019 |
|---|---|---|
| Cash | $ 15,000 | $ 30,000 |
| Accounts receivable (net) | 70,000 | 60,000 |
| Inventory | 60,000 | 50,000 |
| Plant assets (net) | 200,000 | 180,000 |
| | $345,000 | $320,000 |
| Accounts payable | $ 50,000 | $ 60,000 |
| Mortgage payable (15%) | 100,000 | 100,000 |
| Common stock, $10 par | 140,000 | 120,000 |
| Retained earnings | 55,000 | 40,000 |
| | $345,000 | $320,000 |

Additional information for 2020:

1. Net income was $25,000.
2. Sales on account were $375,000. Sales returns and allowances amounted to $25,000.
3. Cost of goods sold was $198,000.

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4. Net cash provided by operating activities was $48,000.
5. Capital expenditures were $25,000, and cash dividends were $10,000.

**Instructions**

Compute the following ratios at December 31, 2020.

**a.** Current ratio.
**b.** Accounts receivable turnover.
**c.** Average collection period.
**d.** Inventory turnover.
**e.** Days in inventory.
**f.** Free cash flow.

*Compute selected ratios.*

**E18.10 (LO 3)** Suppose selected comparative statement data for the giant bookseller **Barnes & Noble** are presented here. All balance sheet data are as of the end of the fiscal year (in millions).

| | 2020 | 2019 |
|---|---|---|
| Net sales | $5,121.8 | $5,286.7 |
| Cost of goods sold | 3,540.6 | 3,679.8 |
| Net income | 75.9 | 135.8 |
| Accounts receivable | 81.0 | 107.1 |
| Inventory | 1,203.5 | 1,358.2 |
| Total assets | 2,993.9 | 3,249.8 |
| Total common stockholders' equity | 921.6 | 1,074.7 |

**Instructions**

Compute the following ratios for 2020.

**a.** Profit margin.
**b.** Asset turnover.
**c.** Return on assets.
**d.** Return on common stockholders' equity.
**e.** Gross profit rate.

*Compute selected ratios.*

**E18.11 (LO 3)** Here is the income statement for Myers, Inc.

**Myers, Inc.**
**Income Statement**
**For the Year Ended December 31, 2020**

| | |
|---|---|
| Sales revenue | $400,000 |
| Cost of goods sold | 230,000 |
| Gross profit | 170,000 |
| Expenses (including $16,000 interest and $24,000 income taxes) | 98,000 |
| Net income | $ 72,000 |

Additional information:

1. Common stock outstanding January 1, 2020, was 32,000 shares, and 40,000 shares were outstanding at December 31, 2020.
2. The market price of Myers stock was $14 at December 31, 2020.
3. Cash dividends of $21,000 were paid, $5,000 of which were to preferred stockholders.

**Instructions**

Compute the following measures for 2020.

**a.** Earnings per share.
**b.** Price-earnings ratio.
**c.** Payout ratio.
**d.** Times interest earned.

*Compute amounts from ratios.*

**E18.12 (LO 3)** Panza Corporation experienced a fire on December 31, 2020, in which its financial records were partially destroyed. It has been able to salvage some of the records and has ascertained the following balances.

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| | December 31, 2020 | December 31, 2019 |
|---|---|---|
| Cash | $ 30,000 | $ 10,000 |
| Accounts receivable (net) | 72,500 | 126,000 |
| Inventory | 200,000 | 180,000 |
| Accounts payable | 50,000 | 90,000 |
| Notes payable | 30,000 | 60,000 |
| Common stock, $100 par | 400,000 | 400,000 |
| Retained earnings | 113,500 | 101,000 |

Additional information:

1. The inventory turnover is 3.8 times.
2. The return on common stockholders' equity is 22%. The company had no additional paid-in capital.
3. The accounts receivable turnover is 11.2 times.
4. The return on assets is 18%.
5. Total assets at December 31, 2019, were $605,000.

### Instructions

Compute the following for Panza Corporation.

**a.** Cost of goods sold for 2020.

**b.** Net credit sales for 2020.

**c.** Net income for 2020.

**d.** Total assets at December 31, 2020.

**E18.13 (LO 3)** The condensed financial statements of Ness Company for the years 2019 and 2020 are presented below. *Compute ratios.*

**Ness Company**
**Balance Sheets**
**December 31 (in thousands)**

| | 2020 | 2019 |
|---|---|---|
| Current assets | | |
| Cash and cash equivalents | $ 330 | $ 360 |
| Accounts receivable (net) | 470 | 400 |
| Inventory | 460 | 390 |
| Prepaid expenses | 130 | 160 |
| Total current assets | 1,390 | 1,310 |
| Property, plant, and equipment (net) | 410 | 380 |
| Investments | 10 | 10 |
| Intangibles and other assets | 530 | 510 |
| Total assets | $2,340 | $2,210 |
| Current liabilities | $ 820 | $ 790 |
| Long-term liabilities | 480 | 380 |
| Stockholders' equity—common | 1,040 | 1,040 |
| Total liabilities and stockholders' equity | $2,340 | $2,210 |

**Ness Company**
**Income Statements**
**For the Years Ended December 31 (in thousands)**

| | 2020 | 2019 |
|---|---|---|
| Sales revenue | $3,800 | $3,460 |
| Costs and expenses | | |
| Cost of goods sold | 970 | 890 |
| Selling & administrative expenses | 2,400 | 2,330 |
| Interest expense | 10 | 20 |
| Total costs and expenses | 3,380 | 3,240 |
| Income before income taxes | 420 | 220 |
| Income tax expense | 168 | 88 |
| Net income | $ 252 | $ 132 |

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Compute the following ratios for 2020 and 2019.

**a.** Current ratio.
**b.** Inventory turnover. (Inventory on December 31, 2018, was $340.)
**c.** Profit margin.
**d.** Return on assets. (Assets on December 31, 2018, were $1,900.)
**e.** Return on common stockholders' equity. (Equity on December 31, 2018, was $900.)
**f.** Debt to assets ratio.
**g.** Times interest earned.

## Problems: Set A

*Prepare vertical analysis and comment on profitability.*

**P18.1A (LO 2, 3)** Writing Here are comparative statement data for Duke Company and Lord Company, two competitors. All balance sheet data are as of December 31, 2020, and December 31, 2019.

| | Duke Company | | Lord Company | |
|---|---|---|---|---|
| | 2020 | 2019 | 2020 | 2019 |
| Net sales | $1,849,000 | | $546,000 | |
| Cost of goods sold | 1,063,200 | | 289,000 | |
| Operating expenses | 240,000 | | 82,000 | |
| Interest expense | 6,800 | | 3,600 | |
| Income tax expense | 62,000 | | 28,000 | |
| Current assets | 325,975 | $312,410 | 83,336 | $ 79,467 |
| Plant assets (net) | 526,800 | 500,000 | 139,728 | 125,812 |
| Current liabilities | 66,325 | 75,815 | 35,348 | 30,281 |
| Long-term liabilities | 113,990 | 90,000 | 29,620 | 25,000 |
| Common stock, $10 par | 500,000 | 500,000 | 120,000 | 120,000 |
| Retained earnings | 172,460 | 146,595 | 38,096 | 29,998 |

### Instructions

**a.** Prepare a vertical analysis of the 2020 income statement data for Duke Company and Lord Company.
**b.** Comment on the relative profitability of the companies by computing the 2020 return on assets and the return on common stockholders' equity for both companies.

*Compute ratios from balance sheets and income statements.*

**P18.2A (LO 3)** The comparative statements of Wahlberg Company are presented here.

**Wahlberg Company**
**Income Statements**
**For the Years Ended December 31**

| | 2020 | 2019 |
|---|---|---|
| Net sales | $1,890,540 | $1,750,500 |
| Cost of goods sold | 1,058,540 | 1,006,000 |
| Gross profit | 832,000 | 744,500 |
| Selling and administrative expenses | 500,000 | 479,000 |
| Income from operations | 332,000 | 265,500 |
| Other expenses and losses | | |
| Interest expense | 22,000 | 20,000 |
| Income before income taxes | 310,000 | 245,500 |
| Income tax expense | 92,000 | 73,000 |
| Net income | $ 218,000 | $ 172,500 |

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**Wahlberg Company**
**Balance Sheets**
**December 31**

| Assets | 2020 | 2019 |
|---|---|---|
| Current assets | | |
| Cash | $ 60,100 | $ 64,200 |
| Debt investments (short-term) | 74,000 | 50,000 |
| Accounts receivable | 117,800 | 102,800 |
| Inventory | 126,000 | 115,500 |
| Total current assets | 377,900 | 332,500 |
| Plant assets (net) | 649,000 | 520,300 |
| Total assets | $1,026,900 | $852,800 |
| **Liabilities and Stockholders' Equity** | | |
| Current liabilities | | |
| Accounts payable | $ 160,000 | $145,400 |
| Income taxes payable | 43,500 | 42,000 |
| Total current liabilities | 203,500 | 187,400 |
| Bonds payable | 220,000 | 200,000 |
| Total liabilities | 423,500 | 387,400 |
| Stockholders' equity | | |
| Common stock ($5 par) | 290,000 | 300,000 |
| Retained earnings | 313,400 | 165,400 |
| Total stockholders' equity | 603,400 | 465,400 |
| Total liabilities and stockholders' equity | $1,026,900 | $852,800 |

All sales were on account. Net cash provided by operating activities for 2020 was $220,000. Capital expenditures were $136,000, and cash dividends were $70,000.

### Instructions

Compute the following ratios for 2020.

**a.** Earnings per share.
**b.** Return on common stockholders' equity.
**c.** Return on assets.
**d.** Current ratio.
**e.** Accounts receivable turnover.
**f.** Average collection period.
**g.** Inventory turnover.
**h.** Days in inventory.
**i.** Times interest earned.
**j.** Asset turnover.
**k.** Debt to assets ratio.
**l.** Free cash flow.

**P18.3A (LO 3)** Writing Condensed balance sheet and income statement data for Jergan Corporation are presented here.

*Perform ratio analysis, and discuss changes in financial position and operating results.*

Excel

**Jergan Corporation**
**Balance Sheets**
**December 31**

| | 2020 | 2019 | 2018 |
|---|---|---|---|
| Cash | $ 30,000 | $ 20,000 | $ 18,000 |
| Accounts receivable (net) | 50,000 | 45,000 | 48,000 |
| Other current assets | 90,000 | 95,000 | 64,000 |
| Investments | 55,000 | 70,000 | 45,000 |
| Plant and equipment (net) | 500,000 | 370,000 | 358,000 |
| | $725,000 | $600,000 | $533,000 |
| Current liabilities | $ 85,000 | $ 80,000 | $ 70,000 |
| Long-term debt | 145,000 | 85,000 | 50,000 |
| Common stock, $10 par | 320,000 | 310,000 | 300,000 |
| Retained earnings | 175,000 | 125,000 | 113,000 |
| | $725,000 | $600,000 | $533,000 |

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**Jergan Corporation**
**Income Statements**
**For the Years Ended December 31**

| | 2020 | 2019 |
|---|---|---|
| Sales revenue | $740,000 | $600,000 |
| Less: Sales returns and allowances | 40,000 | 30,000 |
| Net sales | 700,000 | 570,000 |
| Cost of goods sold | 425,000 | 350,000 |
| Gross profit | 275,000 | 220,000 |
| Operating expenses (including income taxes) | 180,000 | 150,000 |
| Net income | $ 95,000 | $ 70,000 |

Additional information:

1. The market price of Jergan's common stock was $7.00, $7.50, and $8.50 for 2018, 2019, and 2020, respectively.
2. You must compute dividends paid. All dividends were paid in cash.

**Instructions**

**a.** Compute the following ratios for 2019 and 2020.

1. Profit margin.
2. Gross profit rate.
3. Asset turnover.
4. Earnings per share.
5. Price-earnings ratio.
6. Payout ratio.
7. Debt to assets ratio.

**b.** Based on the ratios calculated, discuss briefly the improvement or lack thereof in the financial position and operating results from 2019 to 2020 of Jergan Corporation.

*Compute ratios; comment on overall liquidity and profitability.*

**P18.4A (LO 3)** The following financial information is for Priscoll Company.

**Priscoll Company**
**Balance Sheets**
**December 31**

| Assets | 2020 | 2019 |
|---|---|---|
| Cash | $ 70,000 | $ 65,000 |
| Debt investments (short-term) | 55,000 | 40,000 |
| Accounts receivable | 104,000 | 90,000 |
| Inventory | 230,000 | 165,000 |
| Prepaid expenses | 25,000 | 23,000 |
| Land | 130,000 | 130,000 |
| Building and equipment (net) | 260,000 | 185,000 |
| Total assets | $874,000 | $698,000 |
| **Liabilities and Stockholders' Equity** | | |
| Notes payable (short-term) | $170,000 | $120,000 |
| Accounts payable | 65,000 | 52,000 |
| Accrued liabilities | 40,000 | 40,000 |
| Bonds payable, due 2023 | 250,000 | 170,000 |
| Common stock, $10 par | 200,000 | 200,000 |
| Retained earnings | 149,000 | 116,000 |
| Total liabilities and stockholders' equity | $874,000 | $698,000 |

**Priscoll Company**
**Income Statements**
**For the Years Ended December 31**

| | 2020 | 2019 |
|---|---|---|
| Sales revenue | $882,000 | $790,000 |
| Cost of goods sold | 640,000 | 575,000 |
| Gross profit | 242,000 | 215,000 |
| Operating expenses | 190,000 | 167,000 |
| Net income | $ 52,000 | $ 48,000 |

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Additional information:

1. Inventory at the beginning of 2019 was $115,000.
2. Accounts receivable (net) at the beginning of 2019 were $86,000.
3. Total assets at the beginning of 2019 were $660,000.
4. No common stock transactions occurred during 2019 or 2020.
5. All sales were on account.

### Instructions

**a.** Indicate, by using ratios, the change in liquidity and profitability of Priscoll Company from 2019 to 2020. (*Note:* Not all profitability ratios can be computed nor can cash-basis ratios be computed.)

**b.** The following are three independent situations and a ratio that may be affected. For each situation, compute the affected ratio (1) as of December 31, 2020, and (2) as of December 31, 2021, after giving effect to the situation.

| Situation | Ratio |
|---|---|
| **1.** 18,000 shares of common stock were sold at par on July 1, 2021. Net income for 2021 was $54,000. | Return on common stockholders' equity |
| **2.** All of the notes payable were paid in 2021. All other liabilities remained at their December 31, 2020, levels. At December 31, 2021, total assets were $900,000. | Debt to assets ratio |
| **3.** The market price of common stock was $9 and $12 on December 31, 2020 and 2021, respectively. Net income for 2021 was $54,000. | Price-earnings ratio |

**P18.5A (LO 3) Writing** Suppose selected financial data of **Target** and **Wal-Mart** for 2020 are presented here (in millions).

*Compute selected ratios, and compare liquidity, profitability, and solvency for two companies.*

| | Target Corporation | Wal-Mart Stores, Inc. |
|---|---|---|
| | **Income Statement Data for Year** | |
| Net sales | $65,357 | $408,214 |
| Cost of goods sold | 45,583 | 304,657 |
| Selling and administrative expenses | 15,101 | 79,607 |
| Interest expense | 707 | 2,065 |
| Other income (expense) | (94) | (411) |
| Income tax expense | 1,384 | 7,139 |
| Net income | $ 2,488 | $ 14,335 |
| | **Balance Sheet Data (End of Year)** | |
| Current assets | $18,424 | $ 48,331 |
| Noncurrent assets | 26,109 | 122,375 |
| Total assets | $44,533 | $170,706 |
| Current liabilities | $11,327 | $ 55,561 |
| Long-term debt | 17,859 | 44,089 |
| Total stockholders' equity | 15,347 | 71,056 |
| Total liabilities and stockholders' equity | $44,533 | $170,706 |
| | **Beginning-of-Year Balances** | |
| Total assets | $44,106 | $163,429 |
| Total stockholders' equity | 13,712 | 65,682 |
| Current liabilities | 10,512 | 55,390 |
| Total liabilities | 30,394 | 97,747 |

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| | Target Corporation | Wal-Mart Stores, Inc. |
|---|---|---|
| | Other Data | |
| Average net accounts receivable | $ 7,525 | $ 4,025 |
| Average inventory | 6,942 | 33,836 |
| Net cash provided by operating activities | 5,881 | 26,249 |
| Capital expenditures | 1,729 | 12,184 |
| Dividends | 496 | 4,217 |

### Instructions

**a.** For each company, compute the following ratios.

1. Current ratio.
2. Accounts receivable turnover.
3. Average collection period.
4. Inventory turnover.
5. Days in inventory.
6. Profit margin.
7. Asset turnover.
8. Return on assets.
9. Return on common stockholders' equity.
10. Debt to assets ratio.
11. Times interest earned.
12. Free cash flow.

**b.** Compare the liquidity, solvency, and profitability of the two companies.

## Continuing Case

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### Cookie Creations

(*Note:* This is a continuation of the Cookie Creations case from Chapters 1 through 17.)

**CC18** Natalie and Curtis have comparative balance sheets and income statements for Cookie & Coffee Creations Inc. They have been told that they can use these financial statements to prepare horizontal and vertical analyses, to calculate financial ratios, to analyze how their business is doing, and to make some decisions they have been considering.

*Go to* **WileyPLUS** *for complete case details and instructions.*

## Ethics Case

**EC18** René Kelly, president of RL Industries, wishes to issue a press release to bolster her company's image and maybe even its stock price, which has been gradually falling. As controller, you have been asked to provide a list of 20 financial ratios and other operating statistics for RL Industries' first-quarter financials and operations.

Two days after you provide the data requested, Erin Lourdes, the public relations director of RL, asks you to prove the accuracy of the financial and operating data contained in the press release written by the president and edited by Erin. In the news release, the president highlights the sales increase of 25% over last year's first quarter and the positive change in the current ratio from 1.5:1 last year to 3:1 this year. She also emphasizes that production was up 50% over the prior year's first quarter.

You note that the release contains only positive or improved ratios and none of the negative or deteriorated ratios. For instance, no mention is made that the debt to assets ratio has increased from 35% to 55%, that inventories are up 89%, and that although the current ratio improved, the accounts receivable turnover fell from 12 to 9. Nor is there any mention that the reported profit for the quarter would have been a loss had not the estimated lives of RL plant and machinery been increased by 30%. Erin emphasized, "The Pres wants this release by early this afternoon."

### Instructions

**a.** Who are the stakeholders in this situation?

**b.** Is there anything unethical in the president's actions?

**c.** Should you as controller remain silent? Does Erin have any responsibility?

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## Expand Your Critical Thinking

### Financial Reporting Problem: Apple Inc.

**CT18.1** Your parents are considering investing in **Apple Inc.** common stock. They ask you, as an accounting expert, to make an analysis of the company for them. Apple's financial statements are presented in Appendix A. The complete annual report, including the notes to the financial statements, is available at the company's website.

#### Instructions

(Follow the approach in the chapter for rounding numbers.)

**a.** Make a 3-year trend analysis, using 2013 as the base year, of (1) net sales and (2) net income. Comment on the significance of the trend results.

**b.** Compute for 2015 and 2014 the (1) profit margin, (2) asset turnover, (3) return on assets, and (4) return on common stockholders' equity. How would you evaluate Apple's profitability? Total assets at September 28, 2013, were $207,000 and total stockholders' equity at September 28, 2013, was $123,549.

**c.** Compute for 2015 and 2014 the (1) debt to assets ratio and (2) times interest earned. How would you evaluate Apple's long-term solvency?

**d.** What information outside the annual report may also be useful to your parents in making a decision about Apple?

### Comparative Analysis Problem: PepsiCo, Inc. vs. The Coca-Cola Company

**CT18.2** **PepsiCo**'s financial statements are presented in Appendix B. Financial statements of **The Coca-Cola Company** are presented in Appendix C. The complete annual reports of PepsiCo and Coca-Cola, including the notes to the financial statements, are available at each company's respective website.

#### Instructions

**a.** Based on the information contained in these financial statements, determine each of the following for each company.

**1.** The percentage increase (decrease) in (i) net sales and (ii) net income from 2014 to 2015.

**2.** The percentage increase in (i) total assets and (ii) total common stockholders' (shareholders') equity from 2014 to 2015.

**3.** The basic earnings per share and price-earnings ratio for 2015. (For both PepsiCo and Coca-Cola, use the basic earnings per share.) Coca-Cola's common stock had a market price of $42.63 at the end of fiscal-year 2015, and PepsiCo's common stock had a market price of $103.41.

**b.** What conclusions concerning the two companies can be drawn from these data?

### Comparative Analysis Problem: Amazon.com, Inc. vs. Wal-Mart Stores, Inc.

**CT18.3** **Amazon.com, Inc.**'s financial statements are presented in Appendix D. Financial statements of **Wal-Mart Stores, Inc.** are presented in Appendix E. The complete annual reports of Amazon and Wal-Mart, including the notes to the financial statements, are available at each company's respective website.

#### Instructions

**a.** Based on the information contained in these financial statements, determine each of the following for each company.

**1.** The percentage increase (decrease) in (i) net sales and (ii) net income from 2014 to 2015.

**2.** The percentage increase in (i) total assets and (ii) total common stockholders' (shareholders') equity from 2014 to 2015.

**3.** The basic earnings per share and price-earnings ratio for 2015. (For both Amazon and Wal-Mart, use the basic earnings per share.) Amazon's common stock had a market price of $398.79 at the end of fiscal-year 2015, and Wal-Mart's common stock had a market price of $74.68.

**b.** What conclusions concerning the two companies can be drawn from these data?

### Decision-Making Across the Organization

**CT18.4** You are a loan officer for White Sands Bank of Taos. Paul Jason, president of P. Jason Corporation, has just left your office. He is interested in an 8-year loan to expand the company's operations. The

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borrowed funds would be used to purchase new equipment. As evidence of the company's debt-worthiness, Jason provided you with the following facts.

| | 2020 | 2019 |
|---|---|---|
| Current ratio | 3.1 | 2.1 |
| Asset turnover | 2.8 | 2.2 |
| Net income | Up 32% | Down 8% |
| Earnings per share | $3.30 | $2.50 |

Jason is a very insistent (some would say pushy) man. When you told him that you would need additional information before making your decision, he acted offended and said, "What more could you possibly want to know?" You responded that, at a minimum, you would need complete, audited financial statements.

### Instructions

With the class divided into groups, answer the following.

**a.** Explain why you would want the financial statements to be audited.

**b.** Discuss the implications of the ratios provided for the lending decision you are to make. That is, does the information paint a favorable picture? Are these ratios relevant to the decision?

**c.** List three other ratios that you would want to calculate for this company, and explain why you would use each.

## Real-World Focus

**CT18.5** ***Purpose:*** To employ comparative data and industry data to evaluate a company's performance and financial position.

### Instructions

Identify two competing companies and then go to the Money homepage of the **MSN** website. Under the "Fundamentals" heading, use the Growth, Profitability, Financial health, Price ratios, and Management effectiveness tabs to answer the following questions.

**a.** Evaluate the company's liquidity relative to the industry averages and to the competitor that you chose.

**b.** Evaluate the company's solvency relative to the industry averages and to the competitor that you chose.

**c.** Evaluate the company's profitability relative to the industry averages and to the competitor that you chose.

**CT18.6** The April 25, 2012, edition of the *Wall Street Journal* contains an article by Spencer Jakab entitled "Amazon's Valuation Is Hard to Justify."

### Instructions

Read the article and answer the following questions.

**a.** Explain what is meant by the statement that "On a split-adjusted basis, today's share price is the equivalent of $1,166."

**b.** The article says that **Amazon.com** nearly doubled its capital spending on items such as fulfillment centers (sophisticated warehouses where it finds, packages, and ships goods to customers). Discuss the implications that this spending would have on the company's return on assets in the short-term and in the long-term.

**c.** How does Amazon's P-E ratio compare to that of **Apple**, **Netflix**, and **Wal-Mart**? What does this suggest about investors' expectations about Amazon's future earnings?

**d.** What factor does the article cite as a possible hurdle that might reduce Amazon's ability to raise its operating margin back to previous levels?

## Communication Activity

**CT18.7** Larry Dundee is the chief executive officer of Palmer Electronics. Dundee is an expert engineer but a novice in accounting. Dundee asks you, as an accounting student, to explain (a) the bases for comparison in analyzing Palmer's financial statements and (b) the factors affecting quality of earnings.

### Instructions

Write a memo to Larry Dundee that explains the basis for comparison and the factors affecting quality of earnings.

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## All About You

**CT18.8** In this chapter, you learned how to use many tools for performing a financial analysis of a company. When making personal investments, however, it is most likely that you won't be buying stocks and bonds in individual companies. Instead, when most people want to invest in stock, they buy mutual funds. By investing in a mutual fund, you reduce your risk because the fund diversifies by buying the stock of a variety of different companies, bonds, and other investments, depending on the stated goals of the fund.

Before you invest in a fund, you will need to decide what type of fund you want. For example, do you want a fund that has the potential of high growth (but also high risk), or are you looking for lower risk and a steady stream of income? Do you want a fund that invests only in U.S. companies, or do you want one that invests globally? Many resources are available to help you with these types of decisions.

### Instructions

Search the Internet for "investment allocation questionnaire" and then complete one from a reputable some. Which type of investment fund is appropriate for you and why?

## FASB Codification Activity

**CT18.9** If your school has a subscription to the FASB Codification, log in and prepare responses to the following. Use the Master Glossary for determining the proper definitions.

**a.** Discontinued operations.

**b.** Comprehensive income.

# A Look at IFRS

**LEARNING OBJECTIVE 4**

Compare financial statement analysis and income statement presentation under GAAP and IFRS.

The tools of financial statement analysis are the same throughout the world. Techniques such as vertical and horizontal analysis, for example, are tools used by analysts regardless of whether GAAP- or IFRS-related financial statements are being evaluated. In addition, the ratios provided in the textbook are the same ones that are used internationally.

The beginning of this chapter relates to the income statement. As in GAAP, the income statement is a required statement under IFRS. In addition, the content and presentation of an IFRS income statement is similar to the one used for GAAP. *IAS 1* (revised), "Presentation of Financial Statements," provides general guidelines for the reporting of income statement information. In general, the differences in the presentation of financial statement information are relatively minor.

## Key Points

Following are the key similarities between GAAP and IFRS as related to financial statement analysis and income statement presentation. There are no significant differences between the two standards.

- The tools of financial statement analysis covered in this chapter are universal and therefore no significant differences exist in the analysis methods used.
- The basic objectives of the income statement are the same under both GAAP and IFRS. As indicated in the textbook, a very important objective is to ensure that users of the income statement can evaluate the sustainable income of the company. Thus, both the IASB and the FASB are interested in distinguishing normal levels of income from unusual items in order to better predict a company's future profitability.
- The basic accounting for discontinued operations is the same under IFRS and GAAP.

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- The accounting for changes in accounting principles and changes in accounting estimates are the same for both GAAP and IFRS.
- Both GAAP and IFRS follow the same approach in reporting comprehensive income.

### Looking to the Future

The FASB and the IASB are working on a project that would rework the structure of financial statements. Recently, the IASB decided to require a statement of comprehensive income, similar to what was required under GAAP. In addition, another part of this project addresses the issue of how to classify various items in the income statement. A main goal of this new approach is to provide information that better represents how businesses are run. In addition, the approach draws attention away from one number—net income.

## IFRS Practice

### IFRS Self-Test Questions

1. The basic tools of financial analysis are the same under both GAAP and IFRS **except** that:
   - **a.** horizontal analysis cannot be done because the format of the statements is sometimes different.
   - **b.** analysis is different because vertical analysis cannot be done under IFRS.
   - **c.** the current ratio cannot be computed because current liabilities are often reported before current assets in IFRS statements of position.
   - **d.** None of the above.
2. Presentation of comprehensive income must be reported under IFRS in:
   - **a.** the statement of stockholders' equity.
   - **b.** the income statement ending with net income.
   - **c.** the notes to the financial statements.
   - **d.** a statement of comprehensive income.
3. In preparing its income statement for 2020, Parmalane assembles the following information.

| | |
|---|---|
| Sales revenue | $500,000 |
| Cost of goods sold | 300,000 |
| Operating expenses | 40,000 |
| Loss on discontinued operations | 20,000 |

Ignoring income taxes, what is Parmalane's income from continuing operations for 2020 under IFRS?

- **a.** $260,000.
- **b.** $250,000.
- **c.** $240,000.
- **d.** $160,000.

### International Financial Reporting Problem: Louis Vuitton

**IFRS18.1** The financial statements of **Louis Vuitton** are presented in Appendix F. The complete annual report, including the notes to its financial statements, is available at the company's website.

#### Instructions

Use the company's **2015 annual report** to answer the following questions.

- **a.** What was the company's profit margin for 2015? Has it increased or decreased from 2014?
- **b.** What was the company's operating profit for 2015?
- **c.** The company reported comprehensive income of €4,148 million in 2015. What are the other comprehensive gains and losses recorded in 2015?

#### Answers to IFRS Self-Test Questions

**1.** d **2.** d **3.** d

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# Managerial Accounting

## Chapter Preview

This chapter focuses on issues illustrated in the following Feature Story about **Current Designs** and its parent company **Wenonah Canoe**. To succeed, the company needs to determine and control the costs of material, labor, and overhead, and understand the relationship between costs and profits. Managers often make decisions that determine their company's fate—and their own. Managers are evaluated on the results of their decisions. Managerial accounting provides tools to assist management in making decisions and to evaluate the effectiveness of those decisions.

## Feature Story

### Just Add Water … and Paddle

Mike Cichanowski grew up on the Mississippi River in Winona, Minnesota. At a young age, he learned to paddle a canoe so he could explore the river. Before long, Mike began crafting his own canoes from bent wood and fiberglass in his dad's garage. Then, when his canoe-making shop outgrew the garage, he moved it into an old warehouse. When that was going to be torn down, Mike came to a critical juncture in his life. He took out a bank loan and built his own small shop, giving birth to the company **Wenonah Canoe**.

Wenonah Canoe soon became known as a pioneer in developing techniques to get the most out of new materials such as plastics, composites, and carbon fibers—maximizing strength while minimizing weight.

In the 1990s, as kayaking became popular, Mike made another critical decision when he acquired **Current Designs**, a premier Canadian kayak manufacturer. This venture

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allowed Wenonah to branch out with new product lines while providing Current Designs with much-needed capacity expansion and manufacturing expertise. Mike moved Current Designs' headquarters to Minnesota and made a big (and potentially risky) investment in a new production facility. Today, the company's 90 employees produce about 12,000 canoes and kayaks per year. These are sold across the country and around the world.

Mike will tell you that business success is "a three-legged stool." The first leg is the knowledge and commitment to make a great product. Wenonah's canoes and Current Designs' kayaks are widely regarded as among the very best. The second leg is the ability to sell your product. Mike's company started off making great canoes, but it took a little longer to figure out how to sell them. The third leg is not something that most of you would immediately associate with entrepreneurial success. It is what goes on behind the scenes—accounting. Good accounting information is absolutely critical to the countless decisions, big and small, that ensure the survival and growth of the company.

Bottom line: No matter how good your product is, and no matter how many units you sell, if you don't have a firm grip on your numbers, you are up a creek without a paddle.

**Source:** www.wenonah.com.

Video **Watch the *What Is Managerial Accounting*? video in WileyPLUS for an introduction to managerial accounting and the topics presented in the remaining chapters.**

# Chapter Outline

## LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Identify the features of managerial accounting and the functions of management. | • Comparing managerial and financial accounting<br>• Management functions<br>• Organizational structure | **DO IT! 1** Managerial Accounting Overview |
| **LO 2** Describe the classes of manufacturing costs and the differences between product and period costs. | • Manufacturing costs<br>• Product vs. period costs<br>• Illustration of cost concepts | **DO IT! 2** Managerial Cost Concepts |
| **LO 3** Demonstrate how to compute cost of goods manufactured and prepare financial statements for a manufacturer. | • Income statement<br>• Cost of goods manufactured<br>• Cost of goods manufactured schedule<br>• Balance sheet | **DO IT! 3** Cost of Goods Manufactured |
| **LO 4** Discuss trends in managerial accounting. | • Service industries<br>• Value chain<br>• Balanced scorecard<br>• Business ethics<br>• Corporate social responsibility | **DO IT! 4** Trends in Managerial Accounting |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

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# Managerial Accounting Basics

**LEARNING OBJECTIVE 1**

Identify the features of managerial accounting and the functions of management.

**Managerial accounting** provides economic and financial information for managers and other internal users. The skills that you learn in this course will be vital to your future success in business. You don't believe us? Let's look at some examples of some of the crucial activities of employees at **Current Designs** and where those activities are addressed in this textbook.

In order to know whether it is making a profit, Current Designs needs accurate information about the cost of each kayak (Chapters 20 and 21). To be profitable, Current Designs adjusts the number of kayaks it produces in response to changes in economic conditions and consumer tastes. It needs to understand how changes in the number of kayaks it produces impact its production costs and profitability (Chapter 22). Further, Current Designs' managers often consider alternative courses of action. For example, should the company accept a special order from a customer, produce a particular kayak component internally or outsource it, or continue or discontinue a particular product line (Chapter 23)?

In order to plan for the future, Current Designs prepares budgets (Chapter 24), and it then compares its budgeted numbers with its actual results to evaluate performance and identify areas that need to change (Chapters 25 and 26). Finally, it sometimes needs to make substantial investment decisions, such as the building of a new plant or the purchase of new equipment (Chapter 27).

Someday, you are going to face decisions just like these. You may end up in sales, marketing, management, production, or finance. You may work for a company that provides medical care, produces software, or serves up mouth-watering meals. No matter what your position is and no matter what your product, the skills you acquire in this class will increase your chances of business success. Put another way, in business you can either guess or you can make an informed decision. As a CEO of **Microsoft** once noted: "If you're supposed to be making money in business and supposed to be satisfying customers and building market share, there are numbers that characterize those things. And if somebody can't speak to me quantitatively about it, then I'm nervous." This course gives you the skills you need to quantify information so you can make informed business decisions.

## Comparing Managerial and Financial Accounting

There are both similarities and differences between managerial and financial accounting. First, each field of accounting deals with the economic events of a business. For example, *determining* the unit cost of manufacturing a product is part of managerial accounting. *Reporting* the total cost of goods manufactured and sold is part of financial accounting. In addition, both managerial and financial accounting require that a company's economic events be quantified and communicated to interested parties. **Illustration 19.1** summarizes the principal differences between financial accounting and managerial accounting.

## Management Functions

Managers' activities and responsibilities can be classified into three broad functions:

1. Planning.
2. Directing.
3. Controlling.

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**ILLUSTRATION 19.1** **Differences between financial and managerial accounting**

| Feature | Financial Accounting | Managerial Accounting |
|---|---|---|
| Primary Users of Reports | External users: stockholders, creditors, and regulators. | Internal users: officers and managers. |
| Types and Frequency of Reports | Financial statements. Quarterly and annually. | Internal reports. As frequently as needed. |
| Purpose of Reports | General-purpose. | Special-purpose for specific decisions. |
| Content of Reports | Pertains to business as a whole. Highly aggregated (condensed). Limited to double-entry accounting and cost data. Generally accepted accounting principles. | Pertains to subunits of the business. Very detailed. Extends beyond double-entry accounting to any relevant data. Evaluated based on relevance to decisions. |
| Verification Process | Audited by CPA. | No independent audits. |

In performing these functions, managers make decisions that have a significant impact on the organization.

**Planning** requires managers to look ahead and to establish objectives. These objectives are often diverse: maximizing short-term profits and market share, maintaining a commitment to environmental protection, and contributing to social programs. For example, **Hewlett-Packard**, in an attempt to gain a stronger foothold in the computer industry, greatly reduced its prices to compete with **Dell**. A key objective of management is to **add value** to the business under its control. Value is usually measured by the price of the company's stock and by the potential selling price of the company.

**Directing** involves coordinating a company's diverse activities and human resources to produce a smooth-running operation. This function relates to implementing planned objectives and providing necessary incentives to motivate employees. For example, manufacturers such as **Campbell Soup Company**, **General Motors**, and **Dell** need to coordinate purchasing, manufacturing, warehousing, and selling. Service corporations such as **American Airlines**, **Federal Express**, and **AT&T** coordinate scheduling, sales, service, and acquisitions of equipment and supplies. Directing also involves selecting executives, appointing managers and supervisors, and hiring and training employees.

The third management function, **controlling**, is the process of keeping the company's activities on track. In controlling operations, managers determine whether planned goals are met. When there are deviations from targeted objectives, managers decide what changes are needed to get back on track. Scandals at companies like **Enron**, **Lucent**, and **Xerox** attest to the fact that companies need adequate controls to ensure that the company develops and distributes accurate information.

How do managers achieve control? A smart manager in a very small operation can make personal observations, ask good questions, and know how to evaluate the answers. But using this approach in a larger organization would result in chaos. Imagine the president of **Current Designs** attempting to determine whether the company is meeting its planned objectives without some record of what has happened and what is expected to occur. Thus, large businesses typically use a formal system of evaluation. These systems include such features as budgets, responsibility centers, and performance evaluation reports—all of which are features of managerial accounting.

Decision-making is not a separate management function. Rather, it is the outcome of the exercise of good judgment in planning, directing, and controlling.

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## Organizational Structure

Most companies prepare **organization charts** to show the interrelationships of activities and the delegation of authority and responsibility within the company. **Illustration 19.2** shows a typical organization chart.

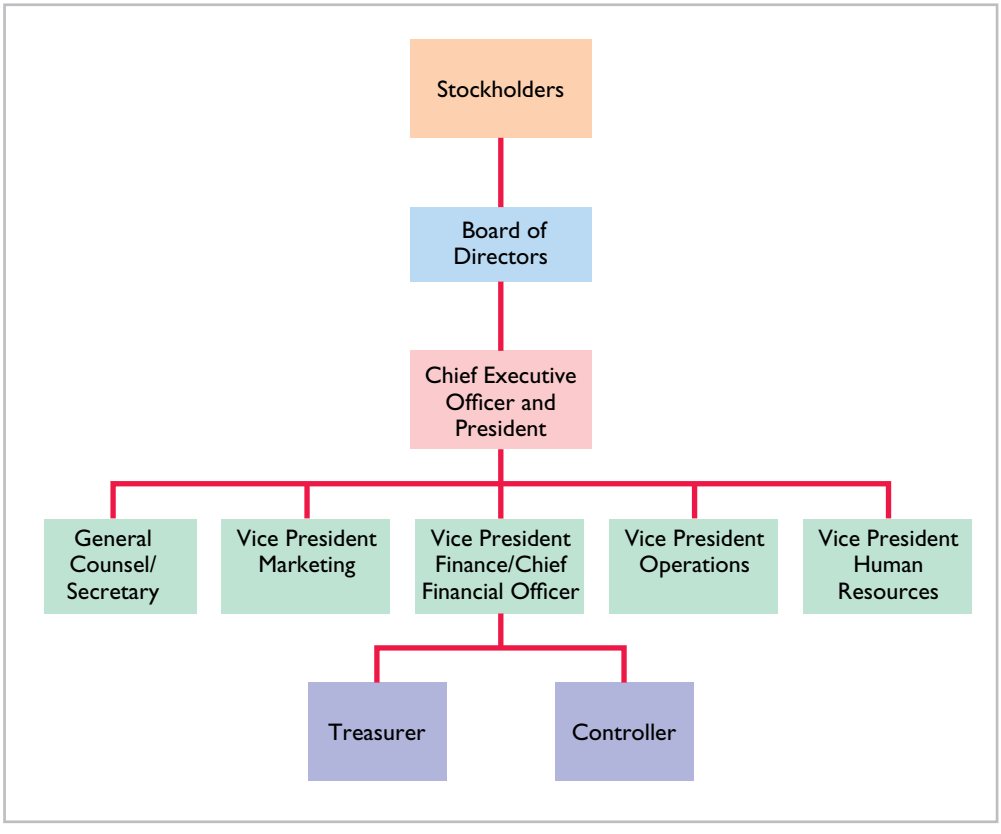


**ILLUSTRATION 19.2**
**A typical corporate organization chart**

Stockholders own the corporation, but they manage it indirectly through a **board of directors** they elect. The board formulates the operating policies for the company or organization. The board also selects officers, such as a president and one or more vice presidents, to execute policy and to perform daily management functions.

The **chief executive officer (CEO)** has overall responsibility for managing the business. As the organization chart shows, the CEO delegates responsibilities to other officers.

Responsibilities within the company are frequently classified as either line or staff positions. Employees with **line positions** are directly involved in the company's primary revenue-generating operating activities. Examples of line positions include the vice president of operations, vice president of marketing, plant managers, supervisors, and production personnel. Employees with **staff positions** are involved in activities that support the efforts of the line employees. In a company like **General Electric** or **Facebook**, employees in finance, legal, and human resources have staff positions. While activities of staff employees are vital to the company, these employees are nonetheless there to serve the line employees who engage in the company's primary operations.

The **chief financial officer (CFO)** is responsible for all of the accounting and finance issues the company faces. The CFO is supported by the **controller** and the **treasurer**. The controller's responsibilities include (1) maintaining the accounting records, (2) ensuring an adequate system of internal control, and (3) preparing financial statements, tax returns, and internal reports. The treasurer has custody of the corporation's funds and is responsible for maintaining the company's cash position.

Also serving the CFO is the internal audit staff. The staff's responsibilities include reviewing the reliability and integrity of financial information provided by the controller and treasurer. Staff members also ensure that internal control systems are functioning properly to

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safeguard corporate assets. In addition, they investigate compliance with policies and regulations. In many companies, these staff members also determine whether resources are used in the most economical and efficient fashion.

The vice president of operations oversees employees with line positions. For example, the company might have multiple plant managers, each of whom reports to the vice president of operations. Each plant also has department managers, such as fabricating, painting, and shipping, each of whom reports to the plant manager.

## Management Insight DPR Construction

Sam Edwards/Caiaimage/Getty Images

### Does a Company Need a CEO?

Can a company function without a person at the top? Nearly all companies have a CEO although some, such as **Oracle**, **Chipotle**, and **Whole Foods**, have operated with two people in the CEO position. **Samsung** even had three CEOs at the same time. On the other hand, **Abercrombie and Fitch** operated for more than two years without a CEO because its CEO unexpectedly quit and a suitable replacement was hard to find. In fact, some companies replace the CEO position with a management committee. These companies feel this structure improves decision-making and increases collaboration. For example, the 4,000 employees of **DPR Construction** are overseen by an eight-person committee. Committee members are rotated off gradually but then continue to advise current members. The company notes that this approach provides more continuity over time than the sometimes sudden and harsh changes that occur when CEOs are replaced.

**Source:** Rachel Feintzeig, "Companies Manage with No CEO," *Wall Street Journal* (December 13, 2016).

**What are some of the advantages cited by companies that choose a structure that lacks a CEO? (Go to WileyPLUS for this answer and additional questions).**

## DO IT! 1 | Managerial Accounting Overview

Indicate whether the following statements are true or false. If false, explain why.

1. Managerial accountants have a single role within an organization: collecting and reporting costs to management.
2. Financial accounting reports are general-purpose and intended for external users.
3. Managerial accounting reports are special-purpose and issued as frequently as needed.
4. Managers' activities and responsibilities can be classified into three broad functions: cost accounting, budgeting, and internal control.
5. Managerial accounting reports must now comply with generally accepted accounting principles (GAAP).

### Solution

1. False. Managerial accountants do determine product costs, but they are also responsible for evaluating how well the company employs its resources. As a result, when the company makes critical strategic decisions, managerial accountants serve as team members alongside personnel from production, marketing, and engineering.
2. True.
3. True.
4. False. Managers' activities are classified into three broad functions: planning, directing, and controlling. Planning requires managers to look ahead to establish objectives. Directing involves coordinating a company's diverse activities and human resources to produce a smooth-running operation. Controlling keeps the company's activities on track.
5. False. Managerial accounting reports are for internal use and thus do not have to comply with GAAP.

Related exercise material: **BE19.1, BE19.2, DO IT! 19.1, and E19.1.**

### ACTION PLAN

- Understand that managerial accounting is a field of accounting that provides economic and financial information for managers and other internal users.
- Understand that financial accounting provides information for external users.
- Analyze which users require which different types of information.

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# Managerial Cost Concepts

**LEARNING OBJECTIVE 2**

Describe the classes of manufacturing costs and the differences between product and period costs.

In order for managers at **Current Designs** to plan, direct, and control operations effectively, they need good information. One very important type of information relates to costs. Managers should ask questions such as the following.

1. What costs are involved in making a product or performing a service?
2. If we decrease production volume, will costs change?
3. What impact will automation have on total costs?
4. How can we best control costs?

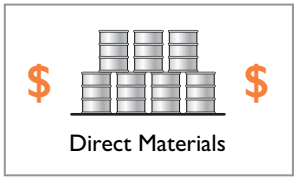
To answer these questions, managers obtain and analyze reliable and relevant cost information. The first step is to understand the various cost categories that companies use.

## Manufacturing Costs

**Manufacturing** consists of activities and processes that convert raw materials into finished goods. Contrast this type of operation with merchandising, which sells products in the form in which they are purchased. Manufacturing costs incurred to produce a product are classified as direct materials, direct labor, and manufacturing overhead.

### Direct Materials

To obtain the materials that will be converted into the finished product, the manufacturer purchases raw materials. **Raw materials** are the basic materials and parts used in the manufacturing process.




Raw materials that can be physically and directly associated with the finished product during the manufacturing process are **direct materials**. Examples include flour in the baking of bread, syrup in the bottling of soft drinks, and steel in the making of automobiles. A primary direct material of many Current Designs' kayaks is polyethylene powder. Some of its high-performance kayaks use Kevlar®.

Some raw materials cannot be easily associated with the finished product. These are called indirect materials. **Indirect materials** have one of two characteristics. (1) They do not physically become part of the finished product (such as polishing compounds used by Current Designs for the finishing touches on kayaks). Or, (2) they are impractical to trace to the finished product because their physical association with the finished product is too small in terms of cost (such as cotter pins and lock washers used in kayak rudder assembly). Companies account for indirect materials as part of **manufacturing overhead**.

### Direct Labor

The work of factory employees that can be physically and directly associated with converting raw materials into finished goods is **direct labor**. Bottlers at **Coca-Cola**, bakers at **Sara Lee**, and equipment operators at **Current Designs** are employees whose activities are usually classified as direct labor. **Indirect labor** refers to the work of employees that has no physical association with the finished product or for which it is impractical to trace costs to the goods produced. Examples include wages of factory maintenance people, factory time-keepers, and factory supervisors. Like indirect materials, companies classify indirect labor as **manufacturing overhead**.

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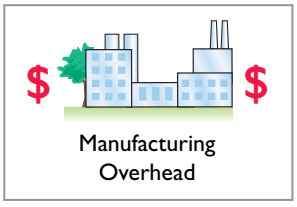
## Manufacturing Overhead




**Manufacturing overhead** consists of costs that are indirectly associated with the manufacture of the finished product. Overhead costs also include manufacturing costs that cannot be classified as direct materials or direct labor. Manufacturing overhead includes indirect materials, indirect labor, depreciation on factory buildings and machines, and insurance, taxes, and maintenance on factory facilities.

One study of manufactured goods found the following magnitudes of the three different product costs as a percentage of the total product cost: direct materials 54%, direct labor 13%, and manufacturing overhead 33%. Note that the direct labor component is the smallest. This component of product cost is dropping substantially because of automation. Companies are working hard to increase productivity by decreasing labor. In some companies, direct labor has become as little as 5% of the total cost.

Tracing direct materials and direct labor costs to specific products is fairly straightforward. Good recordkeeping can tell a company how much plastic it used in making each type of gear, or how many hours of factory labor it took to assemble a part. But allocating overhead costs to specific products presents problems. How much of the purchasing agent's salary is attributable to the hundreds of different products made in the same plant? What about the grease that keeps the machines running smoothly, or the computers that make sure paychecks are generated on time? Boiled down to its simplest form, the question becomes: Which products cause the incurrence of which costs? In subsequent chapters, we show various methods of allocating overhead to products.

# Product Versus Period Costs

**ALTERNATIVE TERMINOLOGY**

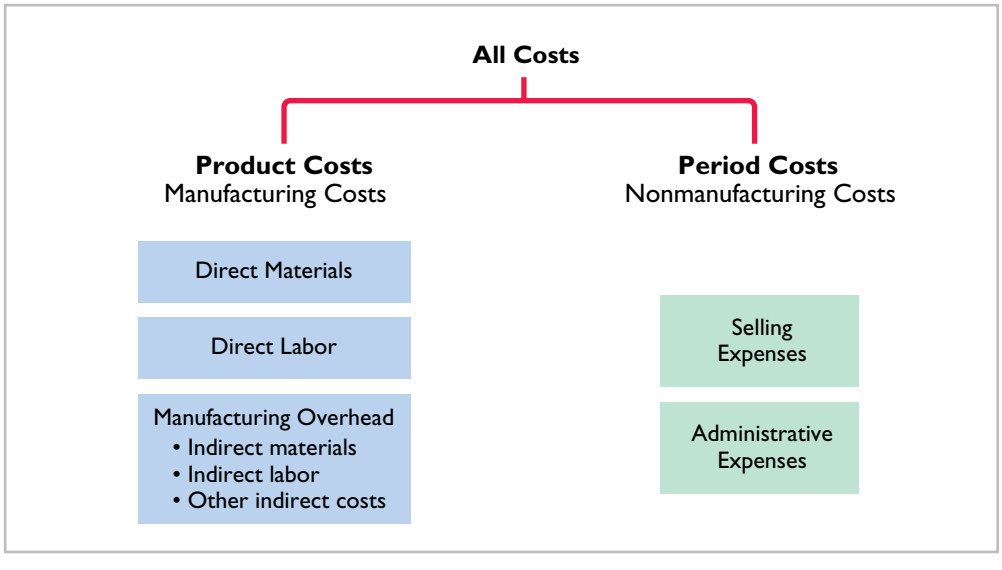
**Product costs are also called *inventoriable* costs.**

Each of the manufacturing cost components—direct materials, direct labor, and manufacturing overhead—are product costs. As the term suggests, **product costs** are costs that are a necessary and integral part of producing the finished product (see **Alternative Terminology**). Companies record product costs, when incurred, as an asset called inventory. These costs do not become expenses until the company sells the finished goods inventory. At that point, the company records the expense as cost of goods sold.

**Period costs** are costs that are matched with the revenue of a specific time period rather than included as part of the cost of a salable product. These are nonmanufacturing costs. Period costs include selling and administrative expenses. In order to determine net income, companies deduct these costs from revenues in the period in which they are incurred.

**Illustration 19.3** summarizes these relationships and cost terms. Our main concern in this chapter is with product costs.

**ILLUSTRATION 19.3**
**Product versus period costs**



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# Illustration of Cost Concepts

To improve your understanding of cost concepts, we illustrate them here through an extended example. Suppose you started your own snowboard factory, Terrain Park Boards. Think that's impossible? **Burton Snowboards** was started by Jake Burton Carpenter, when he was only 23 years old. Jake initially experimented with 100 different prototype designs before settling on a final design. Then Jake, along with two relatives and a friend, started making 50 boards per day in Londonderry, Vermont. Unfortunately, while they made a lot of boards in their first year, they were only able to sell 300 of them. To get by during those early years, Jake taught tennis and tended bar to pay the bills.

Here are some of the costs that your snowboard factory, Terrian Park Boards, would incur.

1. The materials cost of each snowboard (wood cores, fiberglass, resins, metal screw holes, metal edges, and ink) is $30.
2. The labor costs (for example, to trim and shape each board using jig saws and band saws) are $40.
3. Depreciation on the factory building and equipment (for example, presses, grinding machines, and lacquer machines) used to make the snowboards is $25,000 per year.
4. Property taxes on the factory building (where the snowboards are made) are $6,000 per year.
5. Advertising costs (mostly online and catalogue) are $60,000 per year.
6. Sales commissions related to snowboard sales are $20 per snowboard.
7. Salaries for factory maintenance employees are $45,000 per year.
8. The salary of the plant manager is $70,000.
9. The cost of shipping is $8 per snowboard.

**Illustration 19.4** shows how Terrain Park Boards would assign these manufacturing and selling costs to the various categories.

**Terrian Park Boards**

| Cost Item | Product Costs: Direct Materials | Product Costs: Direct Labor | Product Costs: Manufacturing Overhead | Period Costs |
|---|---|---|---|---|
| 1. Material cost ($30 per board) | X | | | |
| 2. Labor costs ($40 per board) | | X | | |
| 3. Depreciation on factory equipment ($25,000 per year) | | | X | |
| 4. Property taxes on factory building ($6,000 per year) | | | X | |
| 5. Advertising costs ($60,000 per year) | | | | X |
| 6. Sales commissions ($20 per board) | | | | X |
| 7. Maintenance salaries (factory facilities, $45,000 per year) | | | X | |
| 8. Salary of plant manager ($70,000 per year) | | | X | |
| 9. Cost of shipping boards ($8 per board) | | | | X |

**ILLUSTRATION 19.4**

**Assignment of costs to cost categories**

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**Total manufacturing costs** are the sum of the **product costs**—direct materials, direct labor, and manufacturing overhead—incurred in the current period. If Terrain Park Boards produces 10,000 snowboards the first year, the total manufacturing costs would be $846,000, as shown in **Illustration 19.5**.

**ILLUSTRATION 19.5**
**Computation of total manufacturing costs**

| Cost Number and Item | Manufacturing Cost |
|---|---|
| 1. Material cost ($30 × 10,000) | $300,000 |
| 2. Labor cost ($40 × 10,000) | 400,000 |
| 3. Depreciation on factory equipment | 25,000 |
| 4. Property taxes on factory building | 6,000 |
| 7. Maintenance salaries (factory facilities) | 45,000 |
| 8. Salary of plant manager | 70,000 |
| **Total manufacturing costs** | **$846,000** |

Once it knows the total manufacturing costs, Terrain Park Boards can compute the manufacturing cost per unit. Assuming 10,000 units, the cost to produce one snowboard is $84.60 ($846,000 ÷ 10,000 units).

The cost concepts discussed in this chapter are used extensively in subsequent chapters. So study Illustration 19.4 carefully. If you do not understand any of these classifications, go back and reread the appropriate section.

### DO IT! 2 | Managerial Cost Concepts

A bicycle company has these costs: tires, salaries of employees who put tires on the wheels, factory building depreciation, advertising expenditures, factory machine lubricants, spokes, salary of factory manager, salary of accountant, handlebars, and salaries of factory maintenance employees. Classify each cost as direct materials, direct labor, overhead, or a period cost.

**Solution**

**Direct materials:** Tires, spokes, and handlebars. **Direct labor:** Salaries of employees who put tires on the wheels. **Manufacturing overhead:** Factory building depreciation, factory machine lubricants, salary of factory manager, and salaries of factory maintenance employees. **Period costs:** Advertising expenditures and salary of accountant.

Related exercise material: **BE19.3, BE19.4, BE19.5, BE19.6, DO IT! 19.2, E19.2, E19.3, E19.4, E19.5, E19.6, and E19.7.**

**ACTION PLAN**

- **Direct materials: any raw materials physically and directly associated with the finished product.**
- **Direct labor: the work of factory employees directly associated with the finished product.**
- **Manufacturing overhead: any costs indirectly associated with the finished product.**
- **Costs that are not product costs are period costs.**

## Manufacturing Costs in Financial Statements

**LEARNING OBJECTIVE 3**

Demonstrate how to compute cost of goods manufactured and prepare financial statements for a manufacturer.

The financial statements of a manufacturer are very similar to those of a merchandiser. For example, you will find many of the same sections and same accounts in the financial statements of **Procter & Gamble** that you find in the financial statements of **Dick's Sporting Goods**. The principal differences between their financial statements occur in two places: the cost of goods sold section in the income statement and the current assets section in the balance sheet.

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# Income Statement

Under a periodic inventory system, the income statements of a merchandiser and a manufacturer differ in the cost of goods sold section. Merchandisers compute cost of goods sold by adding the beginning inventory to the **cost of goods purchased** and subtracting the ending inventory. Manufacturers compute cost of goods sold by adding the beginning finished goods inventory to the **cost of goods manufactured** and subtracting the ending finished goods inventory. **Illustration 19.6**, which assumes a periodic inventory system, shows these different methods.

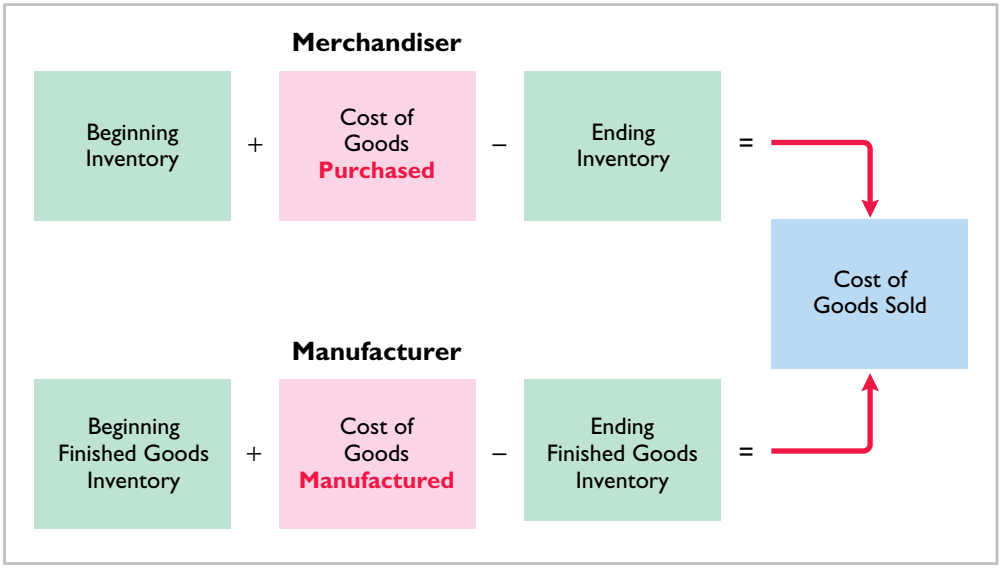


**ILLUSTRATION 19.6**
**Cost of goods sold components**

A number of accounts are involved in determining the cost of goods manufactured. To eliminate excessive detail, income statements typically show only the total cost of goods manufactured. A separate statement, called a Cost of Goods Manufactured Schedule, presents the details (see Illustration 19.9).

**Illustration 19.7** shows the different presentations of the cost of goods sold sections for merchandising and manufacturing companies. The other sections of an income statement are similar for merchandisers and manufacturers.

**ILLUSTRATION 19.7** **Cost of goods sold sections of merchandising and manufacturing income statements**

| Merchandising Company<br>Income Statement (partial)<br>For the Year Ended December 31, 2020 | | Manufacturing Company<br>Income Statement (partial)<br>For the Year Ended December 31, 2020 | |
|---|---|---|---|
| Cost of goods sold | | Cost of goods sold | |
| Inventory, Jan. 1 | $ 70,000 | Finished goods inventory, Jan. 1 | $ 90,000 |
| Cost of goods purchased | 650,000 | Cost of goods manufactured (see Illustration 19.9) | 370,000 |
| Cost of goods available for sale | 720,000 | Cost of goods available for sale | 460,000 |
| Less: Inventory, Dec. 31 | 400,000 | Less: Finished goods inventory, Dec. 31 | 80,000 |
| Cost of goods sold | $ 320,000 | Cost of goods sold | $380,000 |

# Cost of Goods Manufactured

An example may help show how companies determine the cost of goods manufactured. Assume that on January 1, **Current Designs** has a number of kayaks in various stages of production. In total, these partially completed manufactured units are called **beginning work in process inventory**. These are kayaks that were worked on during the prior year but were not completed. As a result, these kayaks will be completed during the current year. The cost of beginning work in process inventory is based on the **manufacturing costs incurred in the prior period**.

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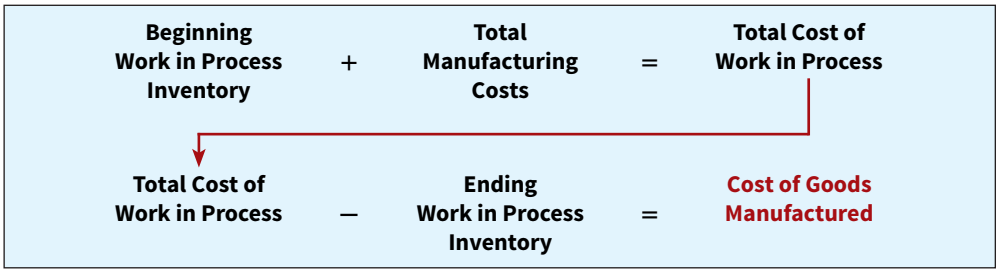
Current Designs first incurs manufacturing costs in the current year to complete the kayaks that were in process on January 1. It then incurs manufacturing costs for production of new orders. The sum of the direct materials costs, direct labor costs, and manufacturing overhead incurred in the current year is the **total manufacturing costs** for the current period.

We now have two cost amounts: (1) the cost of the beginning work in process and (2) the total manufacturing costs for the current period. The sum of these costs is the **total cost of work in process** for the year.

At the end of the year, Current Designs may have some kayaks that are only partially completed. The costs of these units become the cost of the **ending work in process inventory**. To find the **cost of goods manufactured**, we subtract this cost from the total cost of work in process. **Illustration 19.8** shows the formula for determining the cost of goods manufactured.

**ILLUSTRATION 19.8**
**Cost of goods manufactured formula**




## Cost of Goods Manufactured Schedule

The **cost of goods manufactured schedule** reports cost elements used in calculating cost of goods manufactured. **Illustration 19.9** shows the schedule for Current Designs (using assumed data). The schedule presents detailed data for direct materials and for manufacturing overhead.

You should be able to distinguish between "Total manufacturing costs" and "Cost of goods manufactured." As Illustration 19.9 shows, total manufacturing costs is the sum of all manufacturing costs (direct materials, direct labor, and manufacturing overhead) **incurred during the period**. Cost of goods manufactured is the cost of those goods that were **completed during the period**. If we add beginning work in process inventory to the total manufacturing costs incurred during the period and then subtract the ending work in process inventory (the formula given in Illustration 19.8), we arrive at the cost of goods manufactured during the period.

**ILLUSTRATION 19.9**
**Cost of goods manufactured schedule**

**Current Designs**
**Cost of Goods Manufactured Schedule**
**For the Year Ended December 31, 2020**

| | | | |
|---|---|---|---|
| **Work in process, January 1** | | | **$ 18,400** |
| **Direct materials** | | | |
| Raw materials inventory, January 1 | $ 16,700 | | |
| Raw materials purchases | 152,500 | | |
| Total raw materials available for use | 169,200 | | |
| Less: Raw materials inventory, December 31 | 22,800 | | |
| Direct materials used | | $146,400 | |
| **Direct labor** | | 175,600 | |
| **Manufacturing overhead** | | | |
| Indirect labor | 14,300 | | |
| Factory repairs | 12,600 | | |
| Factory utilities | 10,100 | | |
| Factory depreciation | 9,440 | | |
| Factory insurance | 8,360 | | |
| Total manufacturing overhead | | 54,800 | |
| **Total manufacturing costs** | | | **376,800** |
| Total cost of work in process | | | 395,200 |
| **Less: Work in process, December 31** | | | **25,200** |
| **Cost of goods manufactured** | | | **$370,000** |

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## Balance Sheet

The balance sheet for a merchandising company shows just one category of inventory. In contrast, the balance sheet for a manufacturer may have three inventory accounts, as shown in **Illustration 19.10** for Current Designs' kayak inventory.

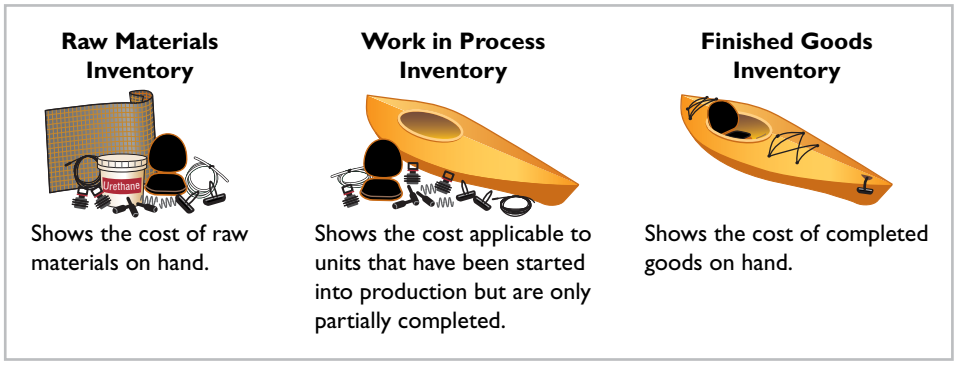
Raw Materials Inventory
Urethane
Shows the cost of raw materials on hand.
Work in Process Inventory
Shows the cost applicable to units that have been started into production but are only partially completed.
Finished Goods Inventory
Shows the cost of completed goods on hand.

**ILLUSTRATION 19.10** **Inventory accounts for a manufacturer**

Finished Goods Inventory is to a manufacturer what Inventory is to a merchandiser. Each of these classifications represents the goods that the company has available for sale. The current assets sections presented in **Illustration 19.11** contrast the presentations of inventories for merchandising and manufacturing companies. The remainder of the balance sheet is similar for the two types of companies.

**ILLUSTRATION 19.11** **Current assets sections of merchandising and manufacturing balance sheets**

**Merchandising Company**
**Balance Sheet**
**December 31, 2020**

| | |
|---|---|
| Current assets | |
| Cash | $100,000 |
| Accounts receivable (net) | 210,000 |
| **Inventory** | **400,000** |
| Prepaid expenses | 22,000 |
| Total current assets | $732,000 |

**Manufacturing Company**
**Balance Sheet**
**December 31, 2020**

| | | |
|---|---|---|
| Current assets | | |
| Cash | | $180,000 |
| Accounts receivable (net) | | 210,000 |
| **Inventory** | | |
| **Finished goods** | **$80,000** | |
| **Work in process** | **25,200** | |
| **Raw materials** | **22,800** | **128,000** |
| Prepaid expenses | | 18,000 |
| Total current assets | | $536,000 |

Each step in the accounting cycle for a merchandiser applies to a manufacturer. For example, prior to preparing financial statements, manufacturers make adjusting entries. The adjusting entries are essentially the same as those of a merchandiser. The closing entries are also similar for manufacturers and merchandisers.

### DO IT! 3 | Cost of Goods Manufactured

The following information is available for Keystone Company.

| | | March 1 | March 31 |
|---|---|---|---|
| Raw materials inventory | | $12,000 | $10,000 |
| Work in process inventory | | 2,500 | 4,000 |
| Materials purchased in March | $ 90,000 | | |
| Direct labor in March | 75,000 | | |
| Manufacturing overhead in March | 220,000 | | |

Prepare the cost of goods manufactured schedule for the month of March 2020.

**ACTION PLAN**

- Start with beginning work in process as the first item in the cost of goods manufactured schedule.
- Sum direct materials used, direct labor, and manufacturing overhead to determine total manufacturing costs.

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**Solution**

**Keystone Company**
**Cost of Goods Manufactured Schedule**
**For the Month Ended March 31, 2020**

| | | | |
|---|---|---|---|
| Work in process, March 1 | | | $ 2,500 |
| Direct materials | | | |
| Raw materials, March 1 | $ 12,000 | | |
| Raw materials purchases | 90,000 | | |
| Total raw materials available for use | 102,000 | | |
| Less: Raw materials, March 31 | 10,000 | | |
| Direct materials used | | $ 92,000 | |
| Direct labor | | 75,000 | |
| Manufacturing overhead | | 220,000 | |
| Total manufacturing costs | | | 387,000 |
| Total cost of work in process | | | 389,500 |
| Less: Work in process, March 31 | | | 4,000 |
| Cost of goods manufactured | | | $385,500 |

Related exercise material: **BE19.7, BE19.8, BE19.9, BE19.10, DO IT! 19.3, E19.8, E19.9, E19.10, E19.11, E19.12, E19.13, E19.14, E19.15, E19.16, and E19.17.**

**ACTION PLAN (*cont.*)**

- Sum beginning work in process and total manufacturing costs to determine total cost of work in process.
- Cost of goods manufactured is the total cost of work in process less ending work in process.

# Managerial Accounting Today

**LEARNING OBJECTIVE 4**

Discuss trends in managerial accounting.

The business environment never stands still. Regulations are always changing, global competition continues to intensify, and technology is a source of constant upheaval. In this rapidly changing world, managerial accounting needs to continue to innovate in order to provide managers with the information they need.

## Service Industries

Much of the U.S. economy has shifted toward an emphasis on services. Today, more than 50% of U.S. workers are employed by service companies. Airlines, marketing agencies, cable companies, and governmental agencies are just a few examples of service companies. How do service companies differ from manufacturing companies? One difference is that services are consumed immediately by customers. For example, when a restaurant produces a meal, that meal is not put in inventory but is instead consumed immediately. An airline uses special equipment to provide its product, but again, the output of that equipment is consumed immediately by the customer in the form of a flight. And a marketing agency performs services for its clients that are immediately consumed by the customer in the form of a marketing plan. For a manufacturing company, like **Boeing**, it often has a long lead time before its airplane is used or consumed by the customer.

This chapter's examples featured manufacturing companies because accounting for the manufacturing environment requires the use of the broadest range of accounts. That is, the accounts used by service companies represent a subset of those used by manufacturers because service companies are not producing inventory. Neither the restaurant, the airline, or the marketing agency discussed above produces an inventoriable product. However, just like a manufacturer, each needs to keep track of the costs of its services in order to know whether it is generating a profit (see **Ethics Note**). A successful restaurateur needs to know the cost of each offering on the menu, an airline needs to know the cost of flight service to each destination,

**ETHICS NOTE**

**Do telecommunications companies have an obligation to provide service to remote or low-user areas for a fee that may be less than the cost of the service?**

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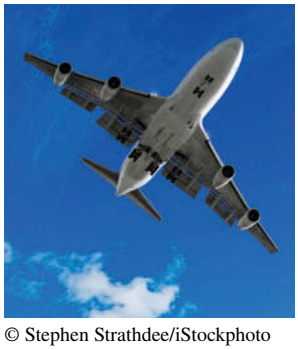
and a marketing agency needs to know the cost to develop a marketing plan. Thus, the techniques shown in this chapter, to accumulate manufacturing costs to determine manufacturing inventory, are equally useful for determining the costs of performing services.

For example, let's consider the costs that **Hewlett-Packard (HP)** might incur on a consulting engagement. A significant portion of its costs would be salaries of consulting personnel. It might also incur travel costs, materials, software costs, and depreciation charges on equipment. In the same way that it needs to keep track of the cost of manufacturing its computers and printers, HP needs to know what its costs are on each consulting job. It could prepare a cost of services performed schedule similar to the cost of goods manufactured schedule in Illustration 19.9. The structure would be essentially the same as the cost of goods manufactured schedule, but section headings would be reflective of the costs of the particular service organization.

Many of the examples we present in subsequent chapters will be based on service companies, as well as a number of end-of-chapter materials.

## Service Company Insight Allegiant Airlines



© Stephen Strathdee/iStockphoto

### Low Fares but Decent Profits

When other airlines were cutting flight service due to recession, **Allegiant Airlines** increased capacity by 21%. Sounds crazy, doesn't it? But it must know something because while the other airlines were losing money, it was generating profits. In fact, it often has the industry's highest profit margins. Consider also that its average one-way fare is only $83. So how does it make money? As a low-budget airline, it focuses on controlling costs.

Allegiant purchases used planes for $3 million each rather than new planes for $40 million. It flies out of small towns, so wages are low and competition is nonexistent. It minimizes hotel costs by having its flight crews finish their day in their home cities. The company also only flies a route if its 150-passenger planes are nearly full (it averages about 90% of capacity). The bottom line is that Allegiant knows its costs to the penny. Knowing what your costs are might not be glamorous, but it sure beats losing money.

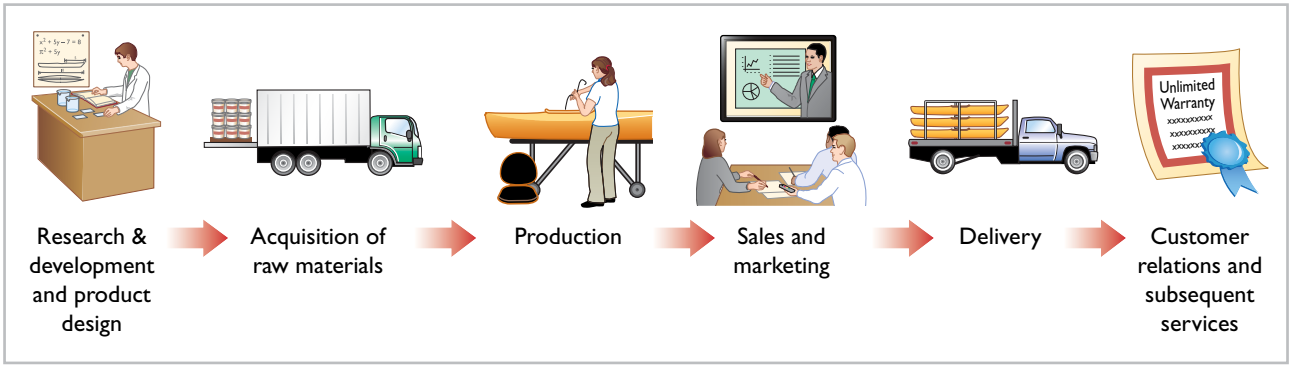
**Sources:** Susan Carey, "For Allegiant, Getaways Mean Profits," *Wall Street Journal Online* (February 18, 2009); and Scott Mayerowitz, "Tiny Allegiant Air Thrives on Low Costs, High Fees," *http://bigstory.ap.org* (June 28, 2013).

**What are some of the line items that would appear in the cost of services performed schedule of an airline? (Go to WileyPLUS for this answer and additional questions.)**

# Focus on the Value Chain

The **value chain** refers to all business processes associated with providing a product or performing a service. **Illustration 19.12** depicts the value chain for a manufacturer. Many of the most significant business innovations in recent years have resulted either directly, or indirectly, from a focus on the value chain. For example, so-called **lean manufacturing**, originally pioneered by Japanese automobile manufacturer **Toyota** but now widely practiced, reviews all business processes in an effort to increase productivity and eliminate waste, all while continually trying to improve quality.

**ILLUSTRATION 19.12** **A manufacturer's value chain**



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**Just-in-time (JIT) inventory** methods, which have significantly lowered inventory levels and costs for many companies, are one innovation that resulted from the focus on the value chain. Under the JIT inventory method, goods are manufactured or purchased just in time for sale. For example, **Dell** can produce and deliver a custom computer within 48 hours of a customer's order. However, JIT also necessitates increased emphasis on product quality. Because JIT companies do not have excess inventory on hand, they cannot afford to stop production because of defects or machine breakdowns. If they stop production, deliveries will be delayed and customers will be unhappy. For example, a design flaw in an **Intel** computer chip was estimated to cost the company $1 billion in repairs and reduced revenue.

As a consequence, many companies now focus on **total quality management (TQM)** to reduce defects in finished products, with the goal of zero defects. **Toyota** was one of the pioneers of TQM processes as early as the 1940s. Some of the largest companies in the world, including **Ford** and **ExxonMobil**, have benefitted from these practices.

Another innovation, the **theory of constraints**, involves identification of "bottlenecks"—constraints within the value chain that limit a company's profitability. Once a major constraint has been identified and eliminated, the company moves on to fix the next most significant constraint. **General Motors** found that by applying the theory of constrains to its distribution system, it could more effectively meet the demands of its dealers and minimize the amount of excess inventory in its distribution system. This also reduced its need for overtime labor.

Technology has played a big role in the focus on the value chain and the implementation of lean manufacturing. For example, **enterprise resource planning (ERP) systems**, such as those provided by **SAP**, provide a comprehensive, centralized, integrated source of information to manage all major business processes—from purchasing, to manufacturing, to sales, to human resources. ERP systems have, in some large companies, replaced as many as 200 individual software packages. In addition, the focus on improving efficiency in the value chain has also resulted in adoption of automated manufacturing processes. Many companies now use computer-integrated manufacturing. These systems often reduce the reliance on manual labor by using robotic equipment. This increases overhead costs as a percentage of total product costs.

As overhead costs have increased because of factory automation, the accuracy of overhead cost allocation to specific products has become more important. Managerial accounting devised an approach, called **activity-based costing (ABC)**, which allocates overhead based on each product's use of particular activities in making the product. In addition to providing more accurate product costing, ABC also can contribute to increased efficiency in the value chain. For example, suppose one of a company's overhead pools is allocated based on the number of setups that each product requires. If a particular product's cost is high because it is allocated a lot of overhead due to a high number of setups, management will be motivated to try to reduce the number of setups and thus reduce its overhead allocation.

## Management Insight Inditex SA

Miguel Vidal/REUTERS/Alamy Stock Photo

### Supplying Today's (Not Yesterday's) Fashions

In terms of total sales dollars, **Inditex SA** is the planet's largest fashion retailer. What does it do differently than its competitors? How did it double its sales over a recent seven-year period while competitors such as **Gap Inc.** stumbled badly? Inditex distinguishes itself in its value chain's ability to react quickly to constantly changing customer tastes. First, designers and commercial staff sit side by side in a massive, open workspace facility, taking direct input from sales staff around the world regarding new product ideas. Manufacturing facilities are located relatively near to company headquarters, allowing more direct input and oversight into production. Also, all goods (other than online sales) are shipped straight from the production facility to stores, rather than warehouses. As a result of its unique approach to how it designs, manufactures and distributes its goods, Inditex can actually sometimes get a new product from initial idea to the store shelf in two weeks rather than the industry norm of two to eight months. And because Inditex provides customers with designs that competitors don't have yet, it can charge higher prices while also continuing to look for ways to increase efficiency and thus cut costs.

**Source:** Patricia Kowsmann, "Fast Fashion: How a Zara Coat Went from Design to Fifth Avenue in 25 Days," *Wall Street Journal* (December 6, 2016).

**What steps has Inditex taken that make its value chain unique? (Go to WileyPLUS for this answer and additional questions).**

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# Balanced Scorecard

As companies implement various business practice innovations, managers sometimes focus too enthusiastically on the latest innovation, to the detriment of other areas of the business. For example, by focusing on total quality management, companies sometimes lose sight of cost/benefit considerations. Similarly, in focusing on reducing inventory levels through just-in-time inventory methods, companies sometimes lose sales due to inventory shortages. The **balanced scorecard** corrects for this limited perspective: This approach uses both financial and nonfinancial measures to evaluate all aspects of a company's operations in an integrated fashion. The performance measures are linked in a cause-and-effect fashion to ensure that they all tie to the company's overall objectives. For example, to increase return on assets, the company could try to increase sales. To increase sales, the company could try to increase customer satisfaction. To increase customer satisfaction, the company could try to reduce product defects. Finally, to reduce product defects, the company could increase employee training. The balanced scorecard, which is discussed further in Chapter 26, is now used by many companies, including **Hilton Hotels**, **Wal-Mart Stores, Inc.**, and **HP**.

# Business Ethics

All employees within an organization are expected to act ethically in their business activities. Given the importance of ethical behavior to corporations and their owners (stockholders), an increasing number of organizations provide codes of business ethics for their employees.

## Creating Proper Incentives

Companies like **Amazon.com**, **IBM**, and **Nike** use complex systems to monitor, control, and evaluate the actions of managers. Unfortunately, these systems and controls sometimes unwittingly create incentives for managers to take unethical actions. For example, because budgets are also used as an evaluation tool, some managers try to "game" the budgeting process by underestimating their division's predicted performance so that it will be easier to meet their performance targets. On the other hand, if budgets are set at unattainable levels, managers sometimes take unethical actions to meet the targets in order to receive higher compensation or, in some cases, to keep their jobs.

For example, at one time, airline manufacturer **Boeing** was plagued by a series of scandals including charges of over-billing, corporate espionage, and illegal conflicts of interest. Some long-time employees of Boeing blamed the decline in ethics on a change in the corporate culture that took place after Boeing merged with **McDonnell Douglas**. They suggested that evaluation systems implemented after the merger to evaluate employee performance gave employees the impression that they needed to succeed no matter what actions were required to do so.

In a recent example, the largest bank in the United States, **Wells Fargo**, admitted that it had fired 5,300 employees for opening more than 2 million accounts without customer approval or knowledge. According to the director of the Consumer Financial Protection Bureau, "Wells Fargo employees secretly opened unauthorized accounts to hit sales targets and receive bonuses."

## Code of Ethical Standards

In response to corporate scandals, the U.S. Congress enacted the **Sarbanes-Oxley Act (SOX)** to help prevent lapses in internal control. One result of SOX was to clarify top management's responsibility for the company's financial statements. CEOs and CFOs are now required to certify that financial statements give a fair presentation of the company's operating results and its financial condition. In addition, top managers must certify that the company maintains an adequate system of internal controls to safeguard the company's assets and ensure accurate financial reports.

Another result of SOX is that companies now pay more attention to the composition of the board of directors. In particular, the audit committee of the board of directors must be comprised entirely of independent members (that is, non-employees) and must contain at least one financial expert. Finally, the law substantially increases the penalties for misconduct.

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To provide guidance for managerial accountants, the Institute of Management Accountants (IMA) has developed a code of ethical standards, entitled *IMA Statement of Ethical Professional Practice.* Management accountants should not commit acts in violation of these standards. Nor should they condone such acts by others within their organizations. Throughout the textbook, we will address various ethical issues managers face.

## Corporate Social Responsibility

The balanced scorecard attempts to take a broader, more inclusive view of corporate profitability measures. Many companies, however, have begun to evaluate not just corporate profitability but also **corporate social responsibility**. In addition to profitability, corporate social responsibility considers a company's efforts to employ sustainable business practices with regard to its employees, society, and the environment. This is sometimes referred to as the **triple bottom line** because it evaluates a company's performance with regard to **people, planet, and profit**. Recent reports indicate that over 50% of the 500 largest U.S. companies provide sustainability reports. Make no mistake, these companies are still striving to maximize profits—in a competitive world, they won't survive long if they don't. In fact, you might recognize a few of the names on a recent list (published by Corporate Knights) of the 100 most sustainable companies in the world. Are you surprised that **General Electric**, **adidas**, **BMW**, **Coca-Cola**, or **Apple** made the list? These companies have learned that with a long-term, sustainable approach, they can maximize profits while also acting in the best interest of their employees, their communities, and the environment. In fact, a monetary bonus was provided by 87% of the companies on the list to managers that met sustainability goals. At various points within this textbook, we will discuss situations where real companies use the very skills that you are learning to evaluate decisions from a sustainable perspective, such as in the following Insight box.

### People, Planet, and Profit Insight Phantom Tac

Geanina Bechea/Shutterstock

#### People Matter

Many clothing factories in developing countries are known for unsafe buildings, poor working conditions, and wage and labor violations. One of the owners of **Phantom Tac**, a clothing manufacturer in Bangladesh, did make efforts to develop sustainable business practices. This owner, David Mayor, provided funding for a training program for female workers. He also developed a website to educate customers about the workers' conditions. But Phantom Tac also had to make a profit. Things got tight when one of its customers canceled orders because Phantom Tac failed a social compliance audit. The company had to quit funding the training program and the website.

Recently, Bangladesh's textile industry has seen some significant improvements in working conditions and safety standards. As Brad Adams, Asia director of **Human Rights Watch**, notes, "The (Dhaka) government has belatedly begun to register unions, which is an important first step, but it now needs to ensure that factory owners stop persecuting their leaders and actually allow them to function."

**Sources:** Jim Yardley, "Clothing Brands Sidestep Blame for Safety Lapses," *The New York Times Online* (December 30, 2013); and Palash Ghosh, "Despite Low Pay, Poor Work Conditions, Garment Factories Empowering Millions of Bangladeshi Women," *International Business Times* (March 25, 2014).

**What are some of the common problems for many clothing factories in developing countries? (Go to WileyPLUS for this answer and additional questions.)**

Sustainable business practices present numerous issues for management and managerial accountants. First, companies need to decide what items need to be measured, generally those that are of utmost importance to its stakeholders. For example, a particular company might be most concerned with minimizing water pollution or maximizing employee safety. Then, for each item identified, the company determines measurable attributes that provide relevant information regarding the company's performance with regard to that item, such as the amount of waste released into public waterways or the number of accidents per 1,000 hours worked. Finally, the company needs to consider the materiality of the item, the cost of measuring these attributes, and the reliability of the measurements. If the company uses this information to make decisions, then accuracy is critical. Of particular concern is whether the measurements can be verified by an outside third party.

Unlike financial reporting, which is overseen by the Financial Accounting Standards Board, the reporting of sustainable business practices currently has no agreed-upon

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standard-setter. A number of organizations have, however, published guidelines. The guidelines published by the **Global Reporting Initiative** are among the most widely recognized and followed. **Illustration 19.13** provides a list of major categories provided by the Global Reporting Initiative for sustainability reporting and a sample of aspects that companies might consider within each category.

**ILLUSTRATION 19.13** **Sample categories in Global Reporting Initiative guidelines**

| | | Social | | | |
|---|---|---|---|---|---|
| **Economic** | **Environmental** | **Labor Practices and Decent Work** | **Human Rights** | **Society** | **Product Responsibility** |
| Economic performance<br>Market presence<br>Indirect economic impacts<br>Procurement practices | Energy<br>Biodiversity<br>Effluents and waste<br>Compliance | Occupational health and safety<br>Training and education<br>Diversity and equal opportunity<br>Labor practices grievance mechanisms | Non-discrimination<br>Child labor<br>Indigenous rights<br>Supplier human rights assessment | Anti-corruption<br>Anti-competitive behavior<br>Supplier assessment for impacts on society<br>Grievance mechanisms for impacts on society | Customer health and safety<br>Product and service labeling<br>Marketing communications<br>Customer privacy |

*Source:* Global Reporting Initiative, *G4 Sustainability Reporting Guidelines,* p. 9. The full report is available at *www.globalreporting.org.*

## DO IT! 4 | Trends in Managerial Accounting

Match the descriptions that follow with the corresponding terms.

**Descriptions:**

1. _____ All activities associated with providing a product or performing a service.
2. _____ A method of allocating overhead based on each product's use of activities in making the product.
3. _____ Systems implemented to reduce defects in finished products with the goal of achieving zero defects.
4. _____ A performance-measurement approach that uses both financial and nonfinancial measures, tied to company objectives, to evaluate a company's operations in an integrated fashion.
5. _____ Inventory system in which goods are manufactured or purchased just as they are needed for use.
6. _____ A company's efforts to employ sustainable business practices with regards to its employees, society, and the environment.
7. _____ A code of ethical standards developed by the Institute of Management Accountants.

**Terms:**

a. Activity-based costing
b. Balanced scorecard
c. Corporate social responsibility
d. Just-in-time (JIT) inventory
e. Total quality management (TQM)
f. Statement of Ethical Professional Practice
g. Value chain

**ACTION PLAN**

- **Develop a forward-looking view, in order to advise and provide information to various members of the organization.**
- **Understand current business trends and issues.**

**Solution**

**1.** g **2.** a **3.** e **4.** b **5.** d **6.** c **7.** f

Related exercise material: **BE19.11, DO IT! 19.4, and E19.18.**

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# Review and Practice

## Learning Objectives Review

### 1 Identify the features of managerial accounting and the functions of management.

The *primary users* of managerial accounting reports, issued as frequently as needed, are internal users, who are officers, department heads, managers, and supervisors in the company. The purpose of these reports is to provide special-purpose information for a particular user for a specific decision. The content of managerial accounting reports pertains to subunits of the business. It may be very detailed, and may extend beyond the double-entry accounting system. The reporting standard is relevance to the decision being made. No independent audits are required in managerial accounting.

The functions of management are planning, directing, and controlling. Planning requires management to look ahead and to establish objectives. Directing involves coordinating the diverse activities and human resources of a company to produce a smooth-running operation. Controlling is the process of keeping the activities on track.

### 2 Describe the classes of manufacturing costs and the differences between product and period costs.

Manufacturing costs are typically classified as either (1) direct materials, (2) direct labor, or (3) manufacturing overhead. Raw materials that can be physically and directly associated with the finished product during the manufacturing process are called direct materials. The work of factory employees that can be physically and directly associated with converting raw materials into finished goods is considered direct labor. Manufacturing overhead consists of costs that are indirectly associated with the manufacture of the finished product.

Product costs are costs that are a necessary and integral part of producing the finished product. Product costs are also called inventoriable costs. These costs do not become expenses until the company sells the finished goods inventory. Period costs are costs that are identified with a specific time period rather than with a salable product. These costs relate to nonmanufacturing costs and therefore are not inventoriable costs.

### 3 Demonstrate how to compute cost of goods manufactured and prepare financial statements for a manufacturer.

Companies add the cost of the beginning work in process to the total manufacturing costs for the current year to arrive at the total cost of work in process for the year. They then subtract the ending work in process from the total cost of work in process to arrive at the cost of goods manufactured.

The difference between a merchandising and a manufacturing income statement is in the cost of goods sold section. A manufacturing cost of goods sold section shows beginning and ending finished goods inventories and the cost of goods manufactured.

The difference between a merchandising and a manufacturing balance sheet is in the current assets section. The current assets section of a manufacturing company's balance sheet presents three inventory accounts: finished goods inventory, work in process inventory, and raw materials inventory.

### 4 Discuss trends in managerial accounting.

Managerial accounting has experienced many changes in recent years, including a shift toward service companies as well as an emphasis on ethical behavior. Improved practices include a focus on managing the value chain through techniques such as just-in-time inventory, total quality management, activity-based costing, and theory of constraints. The balanced scorecard is now used by many companies in order to attain a more comprehensive view of the company's operations. Finally, companies are now evaluating their performance with regard to their corporate social responsibility.

## Glossary Review

**Activity-based costing (ABC)** A method of allocating overhead based on each product's use of activities in making the product. (p. 19-16).

**Balanced scorecard** A performance-measurement approach that uses both financial and nonfinancial measures, tied to company objectives, to evaluate a company's operations in an integrated fashion. (p. 19-17).

**Board of directors** The group of officials elected by the stockholders of a corporation to formulate operating policies and select officers who will manage the company. (p. 19-5).

**Chief executive officer (CEO)** Corporate officer who has overall responsibility for managing the business and delegates responsibilities to other corporate officers. (p. 19-5).

**Chief financial officer (CFO)** Corporate officer who is responsible for all of the accounting and finance issues of the company. (p. 19-5).

**Controller** Financial officer responsible for a company's accounting records, system of internal control, and preparation of financial statements, tax returns, and internal reports. (p. 19-5).

**Corporate social responsibility** The efforts of a company to employ sustainable business practices with regard to its employees, society, and the environment. (p. 19-18).

**Cost of goods manufactured** Total cost of work in process less the cost of the ending work in process inventory. (p. 19-12).

**Direct labor** The work of factory employees that can be physically and directly associated with converting raw materials into finished goods. (p. 19-7).

**Direct materials** Raw materials that can be physically and directly associated with manufacturing the finished product. (p. 19-7).

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**Enterprise resource planning (ERP) system** Software that provides a comprehensive, centralized, integrated source of information used to manage all major business processes. (p. 19-16).

**Indirect labor** Work of factory employees that has no physical association with the finished product or for which it is impractical to trace the costs to the goods produced. (p. 19-7).

**Indirect materials** Raw materials that do not physically become part of the finished product or for which it is impractical to trace to the finished product because their physical association with the finished product is too small. (p. 19-7).

**Just-in-time (JIT) inventory** Inventory system in which goods are manufactured or purchased just in time for sale. (p. 19-16).

**Line positions** Jobs that are directly involved in a company's primary revenue-generating operating activities. (p. 19-5).

**Managerial accounting** A field of accounting that provides economic and financial information for managers and other internal users. (p. 19-3).

**Manufacturing overhead** Manufacturing costs that are indirectly associated with the manufacture of the finished product. (p. 19-8).

**Period costs** Costs that are matched with the revenue of a specific time period and charged to expense as incurred. (p. 19-8).

**Product costs** Costs that are a necessary and integral part of producing the finished product. (p. 19-8).

**Sarbanes-Oxley Act (SOX)** Law passed by Congress intended to reduce unethical corporate behavior. (p. 19-17).

**Staff positions** Jobs that support the efforts of line employees. (p. 19-5).

**Theory of constraints** A specific approach used to identify and manage constraints in order to achieve the company's goals. (p. 19-16).

**Total cost of work in process** Cost of the beginning work in process plus total manufacturing costs for the current period. (p. 19-12).

**Total manufacturing costs** The sum of direct materials, direct labor, and manufacturing overhead incurred in the current period. (p. 19-10).

**Total quality management (TQM)** Systems implemented to reduce defects in finished products with the goal of achieving zero defects. (p. 19-16).

**Treasurer** Financial officer responsible for custody of a company's funds and for maintaining its cash position. (p. 19-5).

**Triple bottom line** The evaluation of a company's social responsibility performance with regard to people, planet, and profit. (p. 19-18).

**Value chain** All business processes associated with providing a product or performing a service. (p. 19-15).

**Work in process inventory** Partially completed manufactured units. (p. 19-11).

## Practice Multiple-Choice Questions

**1. (LO 1)** Managerial accounting:

**a.** is governed by generally accepted accounting principles.
**b.** places emphasis on special-purpose information.
**c.** pertains to the entity as a whole and is highly aggregated.
**d.** is limited to cost data.

**2. (LO 1)** The management of an organization performs several broad functions. They are:

**a.** planning, directing, and selling.
**b.** planning, directing, and controlling.
**c.** planning, manufacturing, and controlling.
**d.** directing, manufacturing, and controlling.

**3. (LO 2)** Direct materials are a:

| | Product Cost | Manufacturing Overhead Cost | Period Cost |
|---|---|---|---|
| **a.** | Yes | Yes | No |
| **b.** | Yes | No | No |
| **c.** | Yes | Yes | Yes |
| **d.** | No | No | No |

**4. (LO 2)** Which of the following costs would a computer manufacturer include in manufacturing overhead?

**a.** The cost of the disk drives.
**b.** The wages earned by computer assemblers.
**c.** The cost of the memory chips.
**d.** Depreciation on testing equipment.

**5. (LO 2)** Which of the following is **not** an element of manufacturing overhead?

**a.** Sales manager's salary.
**b.** Plant manager's salary.
**c.** Factory repairman's wages.
**d.** Product inspector's salary.

**6. (LO 2)** Indirect labor is a:

**a.** nonmanufacturing cost.
**b.** raw material cost.
**c.** product cost.
**d.** period cost.

**7. (LO 2)** Which of the following costs are classified as a period cost?

**a.** Wages paid to a factory custodian.
**b.** Wages paid to a production department supervisor.
**c.** Wages paid to a cost accounting department supervisor.
**d.** Wages paid to an assembly worker.

**8. (LO 3)** For the year, Redder Company has cost of goods manufactured of $600,000, beginning finished goods inventory of $200,000, and ending finished goods inventory of $250,000. The cost of goods sold is:

**a.** $450,000.
**b.** $500,000.
**c.** $550,000.
**d.** $600,000.

**9. (LO 3)** Cost of goods available for sale is a step in the calculation of cost of goods sold of:

**a.** a merchandising company but not a manufacturing company.
**b.** a manufacturing company but not a merchandising company.
**c.** a merchandising company and a manufacturing company.
**d.** neither a manufacturing company nor a merchandising company.

**10. (LO 3)** A cost of goods manufactured schedule shows beginning and ending inventories for:

**a.** raw materials and work in process only.
**b.** work in process only.
**c.** raw materials only.
**d.** raw materials, work in process, and finished goods.

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**11.** **(LO 3)** The formula to determine the cost of goods manufactured is:

**a.** Beginning raw materials inventory + Total manufacturing costs − Ending work in process inventory.

**b.** Beginning work in process inventory + Total manufacturing costs − Ending finished goods inventory.

**c.** Beginning finished goods inventory + Total manufacturing costs − Ending finished goods inventory.

**d.** Beginning work in process inventory + Total manufacturing costs − Ending work in process inventory.

**12.** **(LO 4)** After passage of the Sarbanes-Oxley Act:

**a.** reports prepared by managerial accountants must by audited by CPAs.

**b.** CEOs and CFOs must certify that financial statements give a fair presentation of the company's operating results.

**c.** the audit committee, rather than top management, is responsible for the company's financial statements.

**d.** reports prepared by managerial accountants must comply with generally accepted accounting principles (GAAP).

**13.** **(LO 4)** Which of the following managerial accounting techniques attempts to allocate manufacturing overhead in a more meaningful fashion?

**a.** Just-in-time inventory.

**b.** Total quality management.

**c.** Balanced scorecard.

**d.** Activity-based costing.

**14.** **(LO 4)** Corporate social responsibility refers to:

**a.** the practice by management of reviewing all business processes in an effort to increase productivity and eliminate waste.

**b.** an approach used to allocate overhead based on each product's use of activities.

**c.** the attempt by management to identify and eliminate constraints within the value chain.

**d.** efforts by companies to employ sustainable business practices with regard to employees and the environment.

## Solutions

**1.** **b.** Managerial accounting emphasizes special-purpose information. The other choices are incorrect because (a) financial accounting is governed by generally accepted accounting principles, (c) financial accounting pertains to the entity as a whole and is highly aggregated, and (d) cost accounting and cost data are a subset of management accounting.

**2.** **b.** Planning, directing, and controlling are the broad functions performed by the management of an organization. The other choices are incorrect because (a) selling is performed by the sales group in the organization, not by management; (c) manufacturing is performed by the manufacturing group in the organization, not by management; and (d) manufacturing is performed by the manufacturing group in the organization, not by management.

**3.** **b.** Direct materials are a product cost only. Therefore, choices (a), (c), and (d) are incorrect as direct materials are not manufacturing overhead or a period cost.

**4.** **d.** Depreciation on testing equipment would be included in manufacturing overhead because it is indirectly associated with the finished product. The other choices are incorrect because (a) disk drives would be direct materials, (b) computer assembler wages would be direct labor, and (c) memory chips would be direct materials.

**5.** **a.** The sales manager's salary is not directly or indirectly associated with the manufacture of the finished product. The other choices are incorrect because (b) the plant manager's salary, (c) the factory repairman's wages, and (d) the product inspector's salary are all elements of manufacturing overhead.

**6.** **c.** Indirect labor is a product cost because it is part of the effort required to produce a product. The other choices are incorrect because (a) indirect labor is a manufacturing cost because it is part of the effort required to produce a product, (b) indirect labor is not a raw material cost because raw material costs only include direct materials and indirect materials, and (d) indirect labor is not a period cost because it is part of the effort required to produce a product.

**7.** **c.** Wages paid to a cost accounting department supervisor would be included in administrative expenses and classified as a period cost. The other choices are incorrect because (a) factory custodian wages are indirect labor which is manufacturing overhead and a product cost, (b) production department supervisor wages are indirect labor which is manufacturing overhead and a product cost, and (d) assembly worker wages is direct labor and is a product cost.

**8.** **c.** Cost of goods sold is computed as Beginning finished goods inventory ($200,000) + Cost of goods manufactured ($600,000) − Ending finished goods inventory ($250,000), or $200,000 + $600,000 − $250,000 = $550,000. Therefore, choices (a) $450,000, (b) $500,000, and (d) $600,000 are incorrect.

**9.** **c.** Both a merchandising company and a manufacturing company use cost of goods available for sale to calculate cost of goods sold. Therefore, choices (a) only a merchandising company, (b) only a manufacturing company, and (d) neither a manufacturing company or a merchandising company are incorrect.

**10.** **a.** A cost of goods manufactured schedule shows beginning and ending inventories for raw materials and work in process only. Therefore, choices (b) work in process only and (c) raw materials only are incorrect. Choice (d) is incorrect because the schedule does not include finished goods.

**11.** **d.** The formula to determine the cost of goods manufactured is Beginning work in process inventory + Total manufacturing costs − Ending work in process inventory. The other choices are incorrect because (a) raw materials inventory, (b) ending finished goods inventory, and (c) beginning finished goods inventory and ending finished goods inventory are not part of the computation.

**12.** **b.** CEOs and CFOs must certify that financial statements give a fair presentation of the company's operating results. The other choices are incorrect because (a) reports prepared by financial (not managerial) accountants must be audited by CPAs; (c) SOX clarifies that top management, not the audit committee, is responsible for the company's financial statements; and (d) reports by financial (not managerial) accountants must comply with GAAP.

**13.** **d.** Activity-based costing attempts to allocate manufacturing overhead in a more meaningful fashion. Therefore, choices (a) just-in-time inventory, (b) total quality management, and (c) balanced scorecard are incorrect.

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**14. d.** Corporate social responsibility refers to efforts by companies to employ sustainable business practices with regard to employees and the environment. The other choices are incorrect because (a) defines lean manufacturing, (b) refers to activity-based costing, and (c) describes the theory of constraints.

## Practice Brief Exercises

**1. (LO 1)** The following are selected data for Lopez Furniture:

*Classify manufacturing costs.*

| | |
|---|---|
| Utilities for manufacturing equipment | $120,000 |
| Wood | 850,000 |
| Depreciation on factory building | 220,000 |
| Wages for production workers | 391,000 |
| Fabric | 313,000 |
| Delivery expense | 144,000 |
| Property taxes on factory | 70,000 |

Using the selected data above, determine total (a) direct materials, (b) direct labor, (c) manufacturing overhead, (d) product costs, and (e) period costs.

### Solution

**1. a.** Wood ($850,000) + Fabric ($313,000) = $1,163,000

**b.** Wages for production workers, $391,000

**c.** Utilities ($120,000) + Depreciation ($220,000) + Property taxes ($70,000) = $410,000

**d.** Direct materials ($1,163,000) + Direct labor ($391,000) + Manufacturing overhead ($410,000) = $1,964,000

**e.** Delivery expense, $144,000

**2. (LO 3)** Cody Cellular has the following data: direct labor $100,000, direct materials used $90,000, total manufacturing overhead $110,000, beginning work in process $15,000, and ending work-in-process $24,000. Compute (a) total manufacturing costs, (b) total cost of work in process, and (c) cost of goods manufactured.

*Compute total manufacturing costs and total cost of work in process.*

### Solution

| | |
|---|---|
| **2. a.** Direct materials use | $ 90,000 |
| Direct labor | 100,000 |
| Total manufacturing overhead | 110,000 |
| Total manufacturing costs | $300,000 |
| **b.** Beginning work in process | $ 15,000 |
| Total manufacturing costs | 300,000 |
| Total cost of work in process | $315,000 |
| **c.** Total cost of work in process | $315,000 |
| Less ending work in process | (24,000) |
| Cost of goods manufactured | $291,000 |

**3. (LO 3)** The following are current asset items in alphabetical order for Asche Company's balance sheet at December 31, 2020. Prepare the current assets section (including a complete heading).

*Prepare current assets section.*

| | |
|---|---|
| Accounts receivable | $100,000 |
| Cash | 29,000 |
| Finished goods | 47,000 |
| Prepaid expenses | 20,000 |
| Raw materials | 39,000 |
| Short-term investments | 51,000 |
| Work in process | 44,000 |

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**Solution**

**3.**

**Asche Company**
**Balance Sheet**
**December 31, 2020**

| | | |
|---|---|---|
| Current assets | | |
| Cash | | $ 29,000 |
| Short-term investments | | 51,000 |
| Accounts receivable | | 100,000 |
| Inventories | | |
| Finished goods | $47,000 | |
| Work in process | 44,000 | |
| Raw materials | 39,000 | 130,000 |
| Prepaid expenses | | 20,000 |
| Total current assets | | $330,000 |

## Practice Exercises

*Determine the total amount of various types of costs.*

**1. (LO 2)** Fredricks Company reports the following costs and expenses in May.

| | | | |
|---|---|---|---|
| Factory utilities | $ 15,600 | Direct labor | $89,100 |
| Depreciation on factory equipment | 12,650 | Sales salaries | 46,400 |
| Depreciation on delivery trucks | 8,800 | Property taxes on factory building | 2,500 |
| Indirect factory labor | 48,900 | Repairs to office equipment | 2,300 |
| Indirect materials | 80,800 | Factory repairs | 2,000 |
| Direct materials used | 137,600 | Advertising | 18,000 |
| Factory manager's salary | 13,000 | Office supplies used | 5,640 |

**Instructions**

From the information, determine the total amount of:

**a.** Manufacturing overhead.

**b.** Product costs.

**c.** Period costs.

**Solution**

**1. a.**

| | |
|---|---|
| Factory utilities | $ 15,600 |
| Depreciation on factory equipment | 12,650 |
| Indirect factory labor | 48,900 |
| Indirect materials | 80,800 |
| Factory manager's salary | 13,000 |
| Property taxes on factory building | 2,500 |
| Factory repairs | 2,000 |
| Manufacturing overhead | $175,450 |

**b.**

| | |
|---|---|
| Direct materials | $137,600 |
| Direct labor | 89,100 |
| Manufacturing overhead | 175,450 |
| Product costs | $402,150 |

**c.**

| | |
|---|---|
| Depreciation on delivery trucks | $ 8,800 |
| Sales salaries | 46,400 |
| Repairs to office equipment | 2,300 |
| Advertising | 18,000 |
| Office supplies used | 5,640 |
| Period costs | $ 81,140 |

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*Compute cost of goods manufactured and sold.*

**2. (LO 3)** Tommi Corporation incurred the following costs while manufacturing its product.

| | | | |
|---|---|---|---|
| Materials used in production | $120,000 | Advertising expense | $45,000 |
| Depreciation on plant | 60,000 | Property taxes on plant | 19,000 |
| Property taxes on store | 7,500 | Delivery expense | 21,000 |
| Labor costs of assembly-line workers | 110,000 | Sales commissions | 35,000 |
| Factory supplies used | 25,000 | Salaries paid to sales clerks | 50,000 |

Work-in-process inventory was $10,000 at January 1 and $14,000 at December 31. Finished goods inventory was $60,500 at January 1 and $50,600 at December 31. (Assume all materials were direct.)

### Instructions

**a.** Compute cost of goods manufactured.

**b.** Compute cost of goods sold.

### Solution

| | | | |
|---|---|---|---|
| **2. a.** Work-in-process, 1/1 | | | $ 10,000 |
| Direct materials used | | $120,000 | |
| Direct labor | | 110,000 | |
| Manufacturing overhead | | | |
| Depreciation on plant | $60,000 | | |
| Factory supplies used | 25,000 | | |
| Property taxes on plant | 19,000 | | |
| Total manufacturing overhead | | 104,000 | |
| Total manufacturing costs | | | 334,000 |
| Total cost of work-in-process | | | 344,000 |
| Less: Ending work-in-process | | | 14,000 |
| Cost of goods manufactured | | | $330,000 |
| **b.** Finished goods, 1/1 | | | $ 60,500 |
| Cost of goods manufactured | | | 330,000 |
| Cost of goods available for sale | | | 390,500 |
| Less: Finished goods, 12/31 | | | 50,600 |
| Cost of goods sold | | | $339,900 |

## Practice Problem

*Prepare a cost of goods manufactured schedule, an income statement, and a partial balance sheet.*

**(LO 3)** Superior Company has the following cost and expense data for the year ending December 31, 2020.

| | | | |
|---|---|---|---|
| Raw materials, 1/1/20 | $ 30,000 | Property taxes, factory building | $ 6,000 |
| Raw materials, 12/31/20 | 20,000 | Sales revenue | 1,500,000 |
| Raw materials purchases | 205,000 | Delivery expenses | 100,000 |
| Work in process, 1/1/20 | 80,000 | Sales commissions | 150,000 |
| Work in process, 12/31/20 | 50,000 | Indirect labor | 105,000 |
| Finished goods, 1/1/20 | 110,000 | Factory machinery rent | 40,000 |
| Finished goods, 12/31/20 | 120,000 | Factory utilities | 65,000 |
| Direct labor | 350,000 | Depreciation, factory building | 24,000 |
| Factory manager's salary | 35,000 | Administrative expenses | 300,000 |
| Insurance, factory | 14,000 | | |

### Instructions

**a.** Prepare a cost of goods manufactured schedule for Superior Company for 2020. (Assume that all raw materials used were direct materials.)

**b.** Prepare an income statement for Superior Company for 2020.

**c.** Assume that Superior Company's accounting records show the balances of the following current asset accounts: Cash $17,000, Accounts Receivable (net) $120,000, Prepaid Expenses $13,000, and Short-Term Investments $26,000. Prepare the current assets section of the balance sheet for Superior Company as of December 31, 2020.

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## Solution

**a.**

**Superior Company**
**Cost of Goods Manufactured Schedule**
**For the Year Ended December 31, 2020**

| | | | |
|---|---|---|---|
| Work in process, 1/1 | | | $ 80,000 |
| Direct materials | | | |
| Raw materials inventory, 1/1 | $ 30,000 | | |
| Raw materials purchases | 205,000 | | |
| Total raw materials available for use | 235,000 | | |
| Less: Raw materials inventory, 12/31 | 20,000 | | |
| Direct materials used | | $215,000 | |
| Direct labor | | 350,000 | |
| Manufacturing overhead | | | |
| Indirect labor | $105,000 | | |
| Factory utilities | 65,000 | | |
| Factory machinery rent | 40,000 | | |
| Factory manager's salary | 35,000 | | |
| Depreciation, factory building | 24,000 | | |
| Insurance, factory | 14,000 | | |
| Property taxes, factory building | 6,000 | | |
| Total manufacturing overhead | | 289,000 | |
| Total manufacturing costs | | | 854,000 |
| Total cost of work in process | | | 934,000 |
| Less: Work in process, 12/31 | | | 50,000 |
| Cost of goods manufactured | | | $ 884,000 |

**b.**

**Superior Company**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | | |
|---|---|---|---|
| Sales revenue | | | $1,500,000 |
| Cost of goods sold | | | |
| Finished goods inventory, January 1 | $110,000 | | |
| Cost of goods manufactured | 884,000 | | |
| Cost of goods available for sale | 994,000 | | |
| Less: Finished goods inventory, December 31 | 120,000 | | |
| Cost of goods sold | | | 874,000 |
| Gross profit | | | 626,000 |
| Operating expenses | | | |
| Administrative expenses | 300,000 | | |
| Sales commissions | 150,000 | | |
| Delivery expenses | 100,000 | | |
| Total operating expenses | | | 550,000 |
| Net income | | | $ 76,000 |

**c.**

**Superior Company**
**Balance Sheet (partial)**
**December 31, 2020**

| | | |
|---|---|---|
| Current assets | | |
| Cash | | $ 17,000 |
| Short-term investments | | 26,000 |
| Accounts receivable (net) | | 120,000 |
| Inventory | | |
| Finished goods | $120,000 | |
| Work in process | 50,000 | |
| Raw materials | 20,000 | 190,000 |
| Prepaid expenses | | 13,000 |
| Total current assets | | $366,000 |

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## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

## Questions

**1.** **a.** "Managerial accounting is a field of accounting that provides economic information for all interested parties." Do you agree? Explain.

**b.** Joe Delong believes that managerial accounting serves only manufacturing firms. Is Joe correct? Explain.

**2.** Distinguish between managerial and financial accounting as to (a) primary users of reports, (b) types and frequency of reports, and (c) purpose of reports.

**3.** How do the content of reports and the verification of reports differ between managerial and financial accounting?

**4.** Linda Olsen is studying for the next accounting mid-term examination. Summarize for Linda what she should know about management functions.

**5.** "Decision-making is management's most important function." Do you agree? Why or why not?

**6.** Explain the primary difference between line positions and staff positions, and give examples of each.

**7.** Jerry Lang is unclear as to the difference between the balance sheets of a merchandising company and a manufacturing company. Explain the difference to Jerry.

**8.** How are manufacturing costs classified?

**9.** Mel Finney claims that the distinction between direct and indirect materials is based entirely on physical association with the product. Is Mel correct? Why?

**10.** Tina Burke is confused about the differences between a product cost and a period cost. Explain the differences to Tina.

**11.** Identify the differences in the cost of goods sold section of an income statement between a merchandising company and a manufacturing company.

**12.** The determination of the cost of goods manufactured involves the following factors: (A) beginning work in process inventory, (B) total manufacturing costs, and (C) ending work in process inventory. Identify the meaning of x in the following formulas:

**a.** A + B = x **b.** A + B − C = x

**13.** Sealy Company has beginning raw materials inventory $12,000, ending raw materials inventory $15,000, and raw materials purchases $170,000. What is the cost of direct materials used?

**14.** Tate Inc. has beginning work in process $26,000, direct materials used $240,000, direct labor $220,000, total manufacturing overhead $180,000, and ending work in process $32,000. What are the total manufacturing costs?

**15.** Using the data in Question 14, what are (a) the total cost of work in process and (b) the cost of goods manufactured?

**16.** In what order should manufacturing inventories be listed in a balance sheet?

**17.** How does the output of manufacturing operations differ from that of service operations?

**18.** Discuss whether the product costing techniques discussed in this chapter apply equally well to manufacturers and service companies.

**19.** What is the value chain? Describe, in sequence, the main components of a manufacturer's value chain.

**20.** What is an enterprise resource planning (ERP) system? What are its primary benefits?

**21.** Why is product quality important for companies that implement a just-in-time inventory system?

**22.** Explain what is meant by "balanced" in the balanced scorecard approach.

**23.** In what ways can the budgeting process create incentives for unethical behavior?

**24.** What rules were enacted under the Sarbanes-Oxley Act to address unethical accounting practices?

**25.** What is activity-based costing, and what are its potential benefits?

## Brief Exercises

**BE19.1 (LO 1)** Complete the following comparison table between managerial and financial accounting.

*Distinguish between managerial and financial accounting.*

| | Financial Accounting | Managerial Accounting |
|---|---|---|
| Primary users of reports | | |
| Types of reports | | |
| Frequency of reports | | |
| Purpose of reports | | |
| Content of reports | | |
| Verification process | | |

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*Identify the three management functions.*

**BE19.2 (LO 1)** Listed below are the three functions of the management of an organization.

1. Planning 2. Directing 3. Controlling

Identify which of the following statements best describes each of the above functions.

**a.** _____ requires management to look ahead and to establish objectives. A key objective of management is to add value to the business.

**b.** _____ involves coordinating the diverse activities and human resources of a company to produce a smooth-running operation. This function relates to the implementation of planned objectives.

**c.** _____ is the process of keeping the activities on track. Management determines whether goals are being met and what changes are necessary when there are deviations.

*Classify manufacturing costs.*

**BE19.3 (LO 2)** Determine whether each of the following costs should be classified as direct materials (DM), direct labor (DL), or manufacturing overhead (MO).

**a.** _____ Frames and tires used in manufacturing bicycles.

**b.** _____ Wages paid to production workers.

**c.** _____ Insurance on factory equipment and machinery.

**d.** _____ Depreciation on factory equipment.

*Classify manufacturing costs.*

**BE19.4 (LO 2)** Indicate whether each of the following costs of an automobile manufacturer would be classified as direct materials, direct labor, or manufacturing overhead.

**a.** _____ Windshield.

**b.** _____ Engine.

**c.** _____ Wages of assembly line worker.

**d.** _____ Depreciation of factory machinery.

**e.** _____ Factory machinery lubricants.

**f.** _____ Tires.

**g.** _____ Steering wheel.

**h.** _____ Salary of painting supervisor.

*Identify product and period costs.*

**BE19.5 (LO 2)** Identify whether each of the following costs should be classified as product costs or period costs.

**a.** _____ Manufacturing overhead.

**b.** _____ Selling expenses.

**c.** _____ Administrative expenses.

**d.** _____ Advertising expenses.

**e.** _____ Direct labor.

**f.** _____ Direct materials.

*Classify manufacturing costs.*

**BE19.6 (LO 2)** Presented below are Rook Company's monthly manufacturing cost data related to its tablet computer product.

| | | |
|---|---|---|
| **a.** | Utilities for manufacturing equipment | $116,000 |
| **b.** | Raw materials (CPU, chips, etc.) | $ 85,000 |
| **c.** | Depreciation on manufacturing building | $880,000 |
| **d.** | Wages for production workers | $191,000 |

Enter each cost item in the following table, placing an "X" under the appropriate headings.

| | Product Costs | | |
|---|---|---|---|
| | **Direct Materials** | **Direct Labor** | **Factory Overhead** |
| **a.** | | | |
| **b.** | | | |
| **c.** | | | |
| **d.** | | | |

*Compute total manufacturing costs and total cost of work in process.*

**BE19.7 (LO 3)** Francum Company has the following data: direct labor $209,000, direct materials used $180,000, total manufacturing overhead $208,000, and beginning work in process $25,000. Compute (a) total manufacturing costs and (b) total cost of work in process.

*Prepare current assets section.*

**BE19.8 (LO 3)** In alphabetical order below are current asset items for Roland Company's balance sheet at December 31, 2020. Prepare the current assets section (including a complete heading).

| | |
|---|---|
| Accounts receivable | $200,000 |
| Cash | 62,000 |
| Finished goods | 91,000 |
| Prepaid expenses | 38,000 |
| Raw materials | 83,000 |
| Work in process | 87,000 |

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**BE19.9 (LO 3)** Presented below are incomplete manufacturing cost data. Determine the missing amounts for three different situations.

*Determine missing amounts in computing total manufacturing costs.*

| | Direct Materials Used | Direct Labor Used | Factory Overhead | Total Manufacturing Costs |
|---|---|---|---|---|
| **1.** | $40,000 | $61,000 | $ 50,000 | ? |
| **2.** | ? | $75,000 | $140,000 | $296,000 |
| **3.** | $55,000 | ? | $111,000 | $310,000 |

**BE19.10 (LO 3)** Use the same data from BE19.9 above and the data below. Determine the missing amounts.

*Determine missing amounts in computing cost of goods manufactured.*

| | Total Manufacturing Costs | Work in Process (1/1) | Work in Process (12/31) | Cost of Goods Manufactured |
|---|---|---|---|---|
| **1.** | ? | $120,000 | $82,000 | ? |
| **2.** | $296,000 | ? | $98,000 | $331,000 |
| **3.** | $310,000 | $463,000 | ? | $715,000 |

**BE19.11 (LO 4)** The Sarbanes-Oxley Act (SOX) has important implications for the financial community. Explain two implications of SOX.

*Identify important regulatory changes.*

## DO IT! Exercises

**DO IT! 19.1 (LO 1)** Indicate whether the following statements are true or false.

*Identify managerial accounting concepts.*

1. Managerial accounting reports focus on manufacturing and nonmanufacturing costs.
2. Financial accounting reports pertain to subunits of the business and are very detailed.
3. Managerial accounting reports must follow GAAP and are audited by CPAs.
4. Managers' activities and responsibilities can be classified into three broad functions: planning, directing, and controlling.

**DO IT! 19.2 (LO 2)** A music company has these costs:

*Identify managerial cost classifications.*

| | |
|---|---|
| Advertising | Paper inserts for CD cases |
| Blank CDs | CD plastic cases |
| Depreciation of CD image burner | Salaries of sales representatives |
| Salary of factory manager | Salaries of factory maintenance employees |
| Factory supplies used | Salaries of employees who burn music onto CDs |

Classify each cost as a period or a product cost. Within the product cost category, indicate if the cost is part of direct materials (DM), direct labor (DL), or manufacturing overhead (MO).

**DO IT! 19.3 (LO 3)** The following information is available for Tomlin Company.

*Prepare cost of goods manufactured schedule.*

| | April 1 | April 30 |
|---|---|---|
| Raw materials inventory | $10,000 | $14,000 |
| Work in process inventory | 5,000 | 3,500 |

| | |
|---|---|
| Materials purchased in April | $ 98,000 |
| Direct labor in April | 80,000 |
| Manufacturing overhead in April | 160,000 |

Prepare the cost of goods manufactured schedule for the month of April.

**DO IT! 19.4 (LO 4)** Match the descriptions that follow with the corresponding terms.

*Identify trends in managerial accounting.*

**Descriptions:**

1. _____ Inventory system in which goods are manufactured or purchased just as they are needed for sale.
2. _____ A method of allocating overhead based on each product's use of activities in making the product.
3. _____ Systems that are especially important to firms adopting just-in-time inventory methods.
4. _____ Provides guidelines for companies to describe their sustainable business practices to external parties.

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5. _____ Part of the value chain for a manufacturing company.
6. _____ The U.S. economy is trending toward this.
7. _____ A performance-measurement approach that uses both financial and nonfinancial measures, tied to company objectives, to evaluate a company's operations in an integrated fashion.
8. _____ Requires that top managers certify that the company maintains an adequate system of internal controls.

**Terms:**

**a.** Activity-based costing
**b.** Balanced scorecard
**c.** Total quality management (TQM)
**d.** Research and development, and product design
**e.** Service industries
**f.** Just-in-time (JIT) inventory
**g.** Sarbanes-Oxley Act (SOX)
**h.** Global Reporting Initiative

## Exercises

*Identify distinguishing features of managerial accounting.*

**E19.1 (LO 1)** Justin Bleeber has prepared the following list of statements about managerial accounting, financial accounting, and the functions of management.

1. Financial accounting focuses on providing information to internal users.
2. Staff positions are directly involved in the company's primary revenue-generating activities.
3. Preparation of budgets is part of financial accounting.
4. Managerial accounting applies only to merchandising and manufacturing companies.
5. Both managerial accounting and financial accounting deal with many of the same economic events.
6. Managerial accounting reports are prepared only quarterly and annually.
7. Financial accounting reports are general-purpose reports.
8. Managerial accounting reports pertain to subunits of the business.
9. Managerial accounting reports must comply with generally accepted accounting principles.
10. The company treasurer reports directly to the vice president of operations.

**Instructions**

Identify each statement as true or false. If false, indicate how to correct the statement.

*Classify costs into three classes of manufacturing costs.*

**E19.2 (LO 2)** Presented below is a list of costs and expenses usually incurred by Barnum Corporation, a manufacturer of furniture, in its factory.

1. Salaries for assembly line inspectors.
2. Insurance on factory machines.
3. Property taxes on the factory building.
4. Factory repairs.
5. Upholstery used in manufacturing furniture.
6. Wages paid to assembly line workers.
7. Factory machinery depreciation.
8. Glue, nails, paint, and other small parts used in production.
9. Factory supervisors' salaries.
10. Wood used in manufacturing furniture.

**Instructions**

Classify the above items into the following categories: (a) direct materials, (b) direct labor, and (c) manufacturing overhead.

*Identify types of cost and explain their accounting.*

**E19.3 (LO 2)** Trak Corporation incurred the following costs while manufacturing its bicycles.

| | | | |
|---|---|---|---|
| Bicycle components | $100,000 | Advertising expense | $45,000 |
| Depreciation on plant | 60,000 | Property taxes on plant | 14,000 |
| Property taxes on store | 7,500 | Delivery expense | 21,000 |
| Labor costs of assembly-line workers | 110,000 | Sales commissions | 35,000 |
| Factory supplies used | 13,000 | Salaries paid to sales clerks | 50,000 |

**Instructions**

**a.** Identify each of the above costs as direct materials, direct labor, manufacturing overhead, or period costs.
**b.** Explain the basic difference in accounting for product costs and period costs.

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**E19.4 (LO 2)** Knight Company reports the following costs and expenses in May.

*Determine the total amount of various types of costs.*

Excel

| | | | |
|---|---|---|---|
| Factory utilities | $ 15,500 | Direct labor | $69,100 |
| Depreciation on factory equipment | 12,650 | Sales salaries | 46,400 |
| Depreciation on delivery trucks | 3,800 | Property taxes on factory building | 2,500 |
| Indirect factory labor | 48,900 | Repairs to office equipment | 1,300 |
| Indirect materials | 80,800 | Factory repairs | 2,000 |
| Direct materials used | 137,600 | Advertising | 15,000 |
| Factory manager's salary | 8,000 | Office supplies used | 2,640 |

### Instructions

From the information, determine the total amount of:

**a.** Manufacturing overhead.

**b.** Product costs.

**c.** Period costs.

**E19.5 (LO 2)** Gala Company is a manufacturer of laptop computers. Various costs and expenses associated with its operations are as follows.

*Classify various costs into different cost categories.*

1. Property taxes on the factory building.
2. Production superintendents' salaries.
3. Memory boards and chips used in assembling computers.
4. Depreciation on the factory equipment.
5. Salaries for assembly-line quality control inspectors.
6. Sales commissions paid to sell laptop computers.
7. Electrical components used in assembling computers.
8. Wages of workers assembling laptop computers.
9. Soldering materials used on factory assembly lines.
10. Salaries for the night security guards for the factory building.

The company intends to classify these costs and expenses into the following categories: (a) direct materials, (b) direct labor, (c) manufacturing overhead, and (d) period costs.

### Instructions

List the items (1) through (10). For each item, indicate the cost category to which it belongs.

**E19.6 (LO 2)** Service The administrators of Crawford County's Memorial Hospital are interested in identifying the various costs and expenses that are incurred in producing a patient's X-ray. A list of such costs and expenses is presented below.

*Classify various costs into different cost categories.*

1. Salaries for the X-ray machine technicians.
2. Wages for the hospital janitorial personnel.
3. Film costs for the X-ray machines.
4. Property taxes on the hospital building.
5. Salary of the X-ray technicians' supervisor.
6. Electricity costs for the X-ray department.
7. Maintenance and repairs on the X-ray machines.
8. X-ray department supplies.
9. Depreciation on the X-ray department equipment.
10. Depreciation on the hospital building.

The administrators want these costs and expenses classified as (a) direct materials, (b) direct labor, or (c) service overhead.

### Instructions

List the items (1) through (10). For each item, indicate the cost category to which the item belongs.

**E19.7 (LO 2)** Service National Express reports the following costs and expenses in June 2020 for its delivery service.

*Classify various costs into different cost categories.*

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| | | | |
|---|---|---|---|
| Indirect materials | $ 6,400 | Drivers' salaries | $16,000 |
| Depreciation on delivery equipment | 11,200 | Advertising | 4,600 |
| Dispatcher's salary | 5,000 | Delivery equipment repairs | 300 |
| Property taxes on office building | 870 | Office supplies | 650 |
| CEO's salary | 12,000 | Office utilities | 990 |
| Gas and oil for delivery trucks | 2,200 | Repairs on office equipment | 180 |

**Instructions**

Determine the total amount of (a) delivery service (product) costs and (b) period costs.

*Compute cost of goods manufactured and sold.*

**E19.8 (LO 3)** Lopez Corporation incurred the following costs while manufacturing its product.

| | | | |
|---|---|---|---|
| Materials used in product | $120,000 | Advertising expense | $45,000 |
| Depreciation on plant | 60,000 | Property taxes on plant | 14,000 |
| Property taxes on store | 7,500 | Delivery expense | 21,000 |
| Labor costs of assembly-line workers | 110,000 | Sales commissions | 35,000 |
| | | Salaries paid to sales clerks | 50,000 |
| Factory supplies used | 23,000 | | |

Work in process inventory was $12,000 at January 1 and $15,500 at December 31. Finished goods inventory was $60,000 at January 1 and $45,600 at December 31.

**Instructions**

**a.** Compute cost of goods manufactured.

**b.** Compute cost of goods sold.

*Determine missing amounts in cost of goods manufactured schedule.*

**E19.9 (LO 3)** An incomplete cost of goods manufactured schedule is presented below.

**Hobbit Company**
**Cost of Goods Manufactured Schedule**
**For the Year Ended December 31, 2020**

| | | | |
|---|---|---|---|
| Work in process (1/1) | | | $210,000 |
| Direct materials | | | |
| Raw materials inventory (1/1) | $ ? | | |
| Add: Raw materials purchases | 158,000 | | |
| Total raw materials available for use | ? | | |
| Less: Raw materials inventory (12/31) | 22,500 | | |
| Direct materials used | | $180,000 | |
| Direct labor | | ? | |
| Manufacturing overhead | | | |
| Indirect labor | 18,000 | | |
| Factory depreciation | 36,000 | | |
| Factory utilities | 68,000 | | |
| Total overhead | | 122,000 | |
| Total manufacturing costs | | | ? |
| Total cost of work in process | | | ? |
| Less: Work in process (12/31) | | | 81,000 |
| Cost of goods manufactured | | | $540,000 |

**Instructions**

Complete the cost of goods manufactured schedule for Hobbit Company.

*Determine the missing amount of different cost items.*

**E19.10 (LO 3)** Manufacturing cost data for Copa Company are presented below.

| | Case A | Case B | Case C |
|---|---|---|---|
| Direct materials used | $ (a) | $68,400 | $130,000 |
| Direct labor | 57,000 | 86,000 | (g) |
| Manufacturing overhead | 46,500 | 81,600 | 102,000 |
| Total manufacturing costs | 195,650 | (d) | 253,700 |
| Work in process 1/1/20 | (b) | 16,500 | (h) |
| Total cost of work in process | 221,500 | (e) | 337,000 |
| Work in process 12/31/20 | (c) | 11,000 | 70,000 |
| Cost of goods manufactured | 185,275 | (f) | (i) |

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### Instructions

Indicate the missing amount for each letter (a) through (i).

**E19.11 (LO 3)** Incomplete manufacturing cost data for Horizon Company for 2020 are presented as follows for four different situations.

*Determine the missing amount of different cost items, and prepare a condensed cost of goods manufactured schedule.*

| | Direct Materials Used | Direct Labor Used | Manufacturing Overhead | Total Manufacturing Costs | Work in Process 1/1 | Work in Process 12/31 | Cost of Goods Manufactured |
|---|---|---|---|---|---|---|---|
| (1) | $117,000 | $140,000 | $ 87,000 | $ (a) | $33,000 | $ (b) | $360,000 |
| (2) | (c) | 200,000 | 132,000 | 450,000 | (d) | 40,000 | 470,000 |
| (3) | 80,000 | 100,000 | (e) | 265,000 | 60,000 | 80,000 | (f) |
| (4) | 70,000 | (g) | 75,000 | 288,000 | 45,000 | (h) | 270,000 |

### Instructions

**a.** Indicate the missing amount for each letter.

**b.** Prepare a condensed cost of goods manufactured schedule for situation (1) for the year ended December 31, 2020.

**E19.12 (LO 3)** Cepeda Corporation has the following cost records for June 2020.

*Prepare a cost of goods manufactured schedule and a partial income statement.*

Excel

| | | | |
|---|---|---|---|
| Indirect factory labor | $ 4,500 | Factory utilities | $ 400 |
| Direct materials used | 20,000 | Depreciation, factory equipment | 1,400 |
| Work in process, 6/1/20 | 3,000 | Direct labor | 40,000 |
| Work in process, 6/30/20 | 3,800 | Maintenance, factory equipment | 1,800 |
| Finished goods, 6/1/20 | 5,000 | Indirect materials | 2,200 |
| Finished goods, 6/30/20 | 7,500 | Factory manager's salary | 3,000 |

### Instructions

**a.** Prepare a cost of goods manufactured schedule for June 2020.

**b.** Prepare an income statement through gross profit for June 2020 assuming sales revenue is $92,100.

**E19.13 (LO 2, 3)** Service Keisha Tombert, the bookkeeper for Washington Consulting, a political consulting firm, has recently completed a managerial accounting course at her local college. One of the topics covered in the course was the cost of goods manufactured schedule. Keisha wondered if such a schedule could be prepared for her firm. She realized that, as a service-oriented company, it would have no work in process inventory to consider.

*Classify various costs into different categories and prepare cost of services performed schedule.*

Listed below are the costs her firm incurred for the month ended August 31, 2020.

| | |
|---|---|
| Supplies used on consulting contracts | $ 1,700 |
| Supplies used in the administrative offices | 1,500 |
| Depreciation on equipment used for contract work | 900 |
| Depreciation used on administrative office equipment | 1,050 |
| Salaries of professionals working on contracts | 15,600 |
| Salaries of administrative office personnel | 7,700 |
| Janitorial services for professional offices | 700 |
| Janitorial services for administrative offices | 500 |
| Insurance on contract operations | 800 |
| Insurance on administrative operations | 900 |
| Utilities for contract operations | 1,400 |
| Utilities for administrative offices | 1,300 |

### Instructions

**a.** Prepare a schedule of cost of contract services performed (similar to a cost of goods manufactured schedule) for the month.

**b.** For those costs not included in (a), explain how they would be classified and reported in the financial statements.

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*Prepare a cost of goods manufactured schedule and a partial income statement.*

**E19.14 (LO 3)** The following information is available for Aikman Company.

| | January 1, 2020 | 2020 | December 31, 2020 |
|---|---|---|---|
| Raw materials inventory | $21,000 | | $30,000 |
| Work in process inventory | 13,500 | | 17,200 |
| Finished goods inventory | 27,000 | | 21,000 |
| Materials purchased | | $150,000 | |
| Direct labor | | 220,000 | |
| Manufacturing overhead | | 180,000 | |
| Sales revenue | | 910,000 | |

**Instructions**

**a.** Compute cost of goods manufactured.

**b.** Prepare an income statement through gross profit.

**c.** Show the presentation of the ending inventories on the December 31, 2020, balance sheet.

**d.** How would the income statement and balance sheet of a merchandising company be different from Aikman's financial statements?

*Indicate in which schedule or financial statement(s) different cost items will appear.*

**E19.15 (LO 3)** University Company produces collegiate apparel. From its accounting records, it prepares the following schedule and financial statements on a yearly basis.

**a.** Cost of goods manufactured schedule.

**b.** Income statement.

**c.** Balance sheet.

The following items are found in its ledger and accompanying data.

**1.** Direct labor
**2.** Raw materials inventory, 1/1
**3.** Work in process inventory, 12/31
**4.** Finished goods inventory, 1/1
**5.** Indirect labor
**6.** Depreciation on factory machinery
**7.** Work in process, 1/1
**8.** Finished goods inventory, 12/31
**9.** Factory maintenance salaries
**10.** Cost of goods manufactured
**11.** Depreciation on delivery equipment
**12.** Cost of goods available for sale
**13.** Direct materials used
**14.** Heat and electricity for factory
**15.** Repairs to roof of factory building
**16.** Cost of raw materials purchases

**Instructions**

List the items (1)–(16). For each item, indicate by using the appropriate letter or letters, the schedule and/or financial statement(s) in which the item will appear.

*Prepare a cost of goods manufactured schedule, and present the ending inventories on the balance sheet.*

**E19.16 (LO 3)** An analysis of the accounts of Roberts Company reveals the following manufacturing cost data for the month ended June 30, 2020.

| Inventory | Beginning | Ending |
|---|---|---|
| Raw materials | $9,000 | $13,100 |
| Work in process | 5,000 | 7,000 |
| Finished goods | 9,000 | 8,000 |

Costs incurred: raw materials purchases $54,000, direct labor $47,000, manufacturing overhead $19,900. The specific overhead costs were: indirect labor $5,500, factory insurance $4,000, machinery depreciation

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$4,000, machinery repairs $1,800, factory utilities $3,100, and miscellaneous factory costs $1,500. Assume that all raw materials used were direct materials.

### Instructions

**a.** Prepare the cost of goods manufactured schedule for the month ended June 30, 2020.

**b.** Show the presentation of the ending inventories on the June 30, 2020, balance sheet.

**E19.17 (LO 3) Writing** McQueen Motor Company manufactures automobiles. During September 2020, the company purchased 5,000 head lamps at a cost of $15 per lamp. Fifty of these lamps were used to replace the head lamps in autos used by traveling sales staff, and 4,600 lamps were put in autos manufactured during the month.

*Determine the amount of cost to appear in various accounts, and indicate in which financial statements these accounts would appear.*

Of the autos put into production during September 2020, 90% were completed and transferred to the company's storage lot. Of the cars completed during the month, 70% were sold by September 30.

### Instructions

**a.** Determine the cost of head lamps that would appear in each of the following accounts at September 30, 2020: Raw Materials, Work in Process, Finished Goods, Cost of Goods Sold, and Selling Expenses.

**b.** Write a short memo to the chief accountant, indicating whether and where each of the accounts in (a) would appear on the income statement or on the balance sheet at September 30, 2020.

**E19.18 (LO 4)** The following is a list of terms related to managerial accounting practices.

*Identify various managerial accounting practices.*

1. Activity-based costing.
2. Just-in-time inventory.
3. Balanced scorecard.
4. Value chain.

### Instructions

Match each of the terms with the statement below that best describes the term.

**a.** _____ A performance-measurement technique that attempts to consider and evaluate all aspects of performance using financial and nonfinancial measures in an integrated fashion.

**b.** _____ The group of activities associated with providing a product or performing a service.

**c.** _____ An approach used to reduce the cost associated with handling and holding inventory by reducing the amount of inventory on hand.

**d.** _____ A method used to allocate overhead to products based on each product's use of the activities that cause the incurrence of the overhead cost.

## Problems: Set A

**P19.1A (LO 2)** Ohno Company specializes in manufacturing a unique model of bicycle helmet. The model is well accepted by consumers, and the company has enough orders to keep the factory production at 10,000 helmets per month (80% of its full capacity). Ohno's monthly manufacturing cost and other expense data are as follows.

*Classify manufacturing costs into different categories and compute the unit cost.*

| | |
|---|---|
| Rent on factory equipment | $11,000 |
| Insurance on factory building | 1,500 |
| Raw materials (plastics, polystyrene, etc.) | 75,000 |
| Utility costs for factory | 900 |
| Supplies for general office | 300 |
| Wages for assembly line workers | 58,000 |
| Depreciation on office equipment | 800 |
| Miscellaneous materials (glue, thread, etc.) | 1,100 |
| Factory manager's salary | 5,700 |
| Property taxes on factory building | 400 |
| Advertising for helmets | 14,000 |
| Sales commissions | 10,000 |
| Depreciation on factory building | 1,500 |

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**Instructions**

a. DM $75,000
DL $58,000
MO $22,100
PC $25,100

**a.** Prepare an answer sheet with the following column headings.

| Cost Item | Product Costs: Direct Materials | Direct Labor | Manufacturing Overhead | Period Costs |
|---|---|---|---|---|

Enter each cost item on your answer sheet, placing the dollar amount under the appropriate headings. Total the dollar amounts in each of the columns.

**b.** Compute the cost to produce one helmet.

*Classify manufacturing costs into different categories and compute the unit cost.*

**P19.2A (LO 2)** Bell Company, a manufacturer of audio systems, started its production in October 2020. For the preceding 3 years, Bell had been a retailer of audio systems. After a thorough survey of audio system markets, Bell decided to turn its retail store into an audio equipment factory.

Raw material costs for an audio system will total $74 per unit. Workers on the production lines are on average paid $12 per hour. An audio system usually takes 5 hours to complete. In addition, the rent on the equipment used to assemble audio systems amounts to $4,900 per month. Indirect materials cost $5 per system. A supervisor was hired to oversee production; her monthly salary is $3,000.

Factory janitorial costs are $1,300 monthly. Advertising costs for the audio system will be $9,500 per month. The factory building depreciation expense is $7,800 per year. Property taxes on the factory building will be $9,000 per year.

**Instructions**

a. DM $111,000
DL $ 90,000
MO $ 18,100
PC $ 9,500

**a.** Prepare an answer sheet with the following column headings.

| Cost Item | Product Costs: Direct Materials | Direct Labor | Manufacturing Overhead | Period Costs |
|---|---|---|---|---|

Assuming that Bell manufactures, on average, 1,500 audio systems per month, enter each cost item on your answer sheet, placing the dollar amount per month under the appropriate headings. Total the dollar amounts in each of the columns.

**b.** Compute the cost to produce one audio system.

*Indicate the missing amount of different cost items, and prepare a condensed cost of goods manufactured schedule, an income statement, and a partial balance sheet.*

**P19.3A (LO 3)** Incomplete manufacturing costs, expenses, and selling data for two different cases are as follows.

| | Case 1 | Case 2 |
|---|---|---|
| Direct materials used | $ 9,600 | $ (g) |
| Direct labor | 5,000 | 8,000 |
| Manufacturing overhead | 8,000 | 4,000 |
| Total manufacturing costs | (a) | 16,000 |
| Beginning work in process inventory | 1,000 | (h) |
| Ending work in process inventory | (b) | 3,000 |
| Sales revenue | 24,500 | (i) |
| Sales discounts | 2,500 | 1,400 |
| Cost of goods manufactured | 17,000 | 24,000 |
| Beginning finished goods inventory | (c) | 3,300 |
| Cost of goods available for sale | 22,000 | (j) |
| Cost of goods sold | (d) | (k) |
| Ending finished goods inventory | 3,400 | 2,500 |
| Gross profit | (e) | 7,000 |
| Operating expenses | 2,500 | (l) |
| Net income | (f) | 5,000 |

**Instructions**

**a.** Indicate the missing amount for each letter.

b. Ending WIP $ 6,600

**b.** Prepare a condensed cost of goods manufactured schedule for Case 1.

c. Current assets $29,000

**c.** Prepare an income statement and the current assets section of the balance sheet for Case 1. Assume that in Case 1 the other items in the current assets section are as follows: Cash $3,000, Receivables (net) $15,000, Raw Materials $600, and Prepaid Expenses $400.

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**P19.4A (LO 3)** The following data were taken from the records of Clarkson Company for the fiscal year ended June 30, 2020.

*Prepare a cost of goods manufactured schedule, a partial income statement, and a partial balance sheet.*

Excel

| | | | |
|---|---|---|---|
| Raw Materials | | Factory Insurance | $ 4,600 |
| Inventory 7/1/19 | $ 48,000 | Factory Machinery | |
| Raw Materials | | Depreciation | 16,000 |
| Inventory 6/30/20 | 39,600 | Factory Utilities | 27,600 |
| Finished Goods | | Office Utilities Expense | 8,650 |
| Inventory 7/1/19 | 96,000 | Sales Revenue | 534,000 |
| Finished Goods | | Sales Discounts | 4,200 |
| Inventory 6/30/20 | 75,900 | Plant Manager's Salary | 58,000 |
| Work in Process | | Factory Property Taxes | 9,600 |
| Inventory 7/1/19 | 19,800 | Factory Repairs | 1,400 |
| Work in Process | | Raw Materials Purchases | 96,400 |
| Inventory 6/30/20 | 18,600 | Cash | 32,000 |
| Direct Labor | 139,250 | | |
| Indirect Labor | 24,460 | | |
| Accounts Receivable | 27,000 | | |

### Instructions

**a.** Prepare a cost of goods manufactured schedule. (Assume all raw materials used were direct materials.)

**b.** Prepare an income statement through gross profit.

**c.** Prepare the current assets section of the balance sheet at June 30, 2020.

a. CGM $386,910
b. Gross profit $122,790
c. Current assets $193,100

**P19.5A (LO 3)** Empire Company is a manufacturer of smart phones. Its controller resigned in October 2020. An inexperienced assistant accountant has prepared the following income statement for the month of October 2020.

*Prepare a cost of goods manufactured schedule and a correct income statement.*

Excel

**Empire Company**
**Income Statement**
**For the Month Ended October 31, 2020**

| | | |
|---|---|---|
| Sales revenue | | $780,000 |
| Less: Operating expenses | | |
| Raw materials purchases | $264,000 | |
| Direct labor cost | 190,000 | |
| Advertising expense | 90,000 | |
| Selling and administrative salaries | 75,000 | |
| Rent on factory facilities | 60,000 | |
| Depreciation on sales equipment | 45,000 | |
| Depreciation on factory equipment | 31,000 | |
| Indirect labor cost | 28,000 | |
| Utilities expense | 12,000 | |
| Insurance expense | 8,000 | 803,000 |
| Net loss | | $ (23,000) |

Prior to October 2020, the company had been profitable every month. The company's president is concerned about the accuracy of the income statement. As her friend, you have been asked to review the income statement and make necessary corrections. After examining other manufacturing cost data, you have acquired additional information as follows.

1. Inventory balances at the beginning and end of October were:

| | October 1 | October 31 |
|---|---|---|
| Raw materials | $18,000 | $29,000 |
| Work in process | 20,000 | 14,000 |
| Finished goods | 30,000 | 50,000 |

2. Only 75% of the utilities expense and 60% of the insurance expense apply to factory operations. The remaining amounts should be charged to selling and administrative activities.

### Instructions

**a.** Prepare a schedule of cost of goods manufactured for October 2020.

**b.** Prepare a correct income statement for October 2020.

a. CGM $581,800
b. NI $ 2,000

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## Continuing Cases

*Chapters 19–27 include a hypothetical case featuring **Current Designs**, the company described at the beginning of this chapter. Students can also work through this case following an **Excel tutorial** available in **WileyPLUS**. Each chapter's tutorial focuses on a different Excel function or feature.*

Excel

### Current Designs

**CD19** Mike Cichanowski founded **Wenonah Canoe** and later purchased **Current Designs**, a company that designs and manufactures kayaks. The kayak-manufacturing facility is located just a few minutes from the canoe company's headquarters in Winona, Minnesota.

Current Designs makes kayaks using two different processes. The rotational molding process uses high temperature to melt polyethylene powder in a closed rotating metal mold to produce a complete kayak hull and deck in a single piece. These kayaks are less labor-intensive and less expensive for the company to produce and sell.

Its other kayaks use the vacuum-bagged composite lamination process (which we will refer to as the composite process). Layers of fiberglass or Kevlar® are carefully placed by hand in a mold and are bonded with resin. Then, a high-pressure vacuum is used to eliminate any excess resin that would otherwise add weight and reduce strength of the finished kayak. These kayaks require a great deal of skilled labor as each boat is individually finished. The exquisite finish of the vacuum-bagged composite kayaks gave rise to Current Designs' tag line, "A work of art, made for life."

Current Designs has the following managers:

Mike Cichanowski, CEO
Diane Buswell, Controller
Deb Welch, Purchasing Manager
Bill Johnson, Sales Manager
Dave Thill, Kayak Plant Manager
Rick Thrune, Production Manager for Composite Kayaks

Current Designs

Home Insert Page Layout Formulas Data Review View

P18 fx

| | A | B | C | | | D | E |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | Product Costs | | | | |
| 3 | Payee | Purpose | Direct Materials | Direct Labor | Manufacturing Overhead | Period Costs | Amount |
| 4 | Winona Agency | Property insurance for the manufacturing plant | | | | | 3,200 |
| 5 | Bill Johnson (sales manager) | Payroll check—payment to sales manager | | | | | 1,700 |
| 6 | Xcel Energy | Electricity for manufacturing plant | | | | | 450 |
| 7 | Winona Printing | Price lists for salespeople | | | | | 85 |
| 8 | Jim Kaiser (sales representative) | Sales commissions | | | | | 1,250 |
| 9 | Dave Thill (plant manager) | Payroll check—payment to plant manager | | | | | 1,450 |
| 10 | Dana Schultz (kayak assembler) | Payroll check—payment to kayak assembler | | | | | 760 |
| 11 | Composite One | Bagging film used when kayaks are assembled; it is discarded after use | | | | | 260 |
| 12 | Fastenal | Shop supplies—brooms, paper towels, etc. | | | | | 890 |
| 13 | Ravago | Polyethylene powder which is the main ingredient for the rotational molded kayaks | | | | | 3,170 |
| 14 | Winona County | Property taxes on manufacturing plant | | | | | 5,480 |
| 15 | North American Composites | Kevlar® fabric for composite kayaks | | | | | 4,930 |
| 16 | Waste Management | Trash disposal for the company office building | | | | | 660 |
| 17 | None | Journal entry to record depreciation of manufacturing equipment | | | | | 4,540 |

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### Instructions

**a.** What are the primary information needs of each manager?

**b.** Name one special-purpose management accounting report that could be designed for each manager. Include the name of the report, the information it would contain, and how frequently it should be issued.

**c.** When Diane Buswell, controller for Current Designs, reviewed the accounting records for a recent period, she noted the cost items and amounts shown above (amounts are assumed). Enter the amount for each item in the appropriate cost category. Then sum the amounts in each cost category column.

*The **Waterways case** starts in this chapter and continues in every remaining chapter. You will find the complete case for each chapter in **WileyPLUS**.*

## Waterways

**WP19** Waterways Corporation is a private corporation formed for the purpose of providing the products and the services needed to irrigate farms, parks, commercial projects, and private lawns. It has a centrally located factory in a U.S. city that manufactures the products it markets to retail outlets across the nation. It also maintains a division that performs installation and warranty servicing in six metropolitan areas.

The mission of Waterways is to manufacture quality parts that can be used for effective irrigation projects that also conserve water. By that effort, the company hopes to satisfy its customers, perform rapid and responsible service, and serve the community and the employees who represent them in each community.

The company has been growing rapidly, so management is considering new ideas to help the company continue its growth and maintain the high quality of its products.

Waterways was founded by Will Winkman, who is the company president and chief executive officer (CEO). Working with him from the company's inception is Will's brother, Ben, whose sprinkler designs and ideas about the installation of proper systems have been a major basis of the company's success. Ben is the vice president who oversees all aspects of design and production in the company.

The factory itself is managed by Todd Senter who hires his line managers to supervise the factory employees. The factory makes all of the parts for the irrigation systems. The purchasing department is managed by Helen Hines.

The installation and training division is overseen by vice president Henry Writer, who supervises the managers of the six local installation operations. Each of these local managers hires his or her own local service people. These service employees are trained by the home office under Henry Writer's direction because of the uniqueness of the company's products.

There is a small human resources department under the direction of Sally Fenton, a vice president who handles the employee paperwork, though hiring is actually performed by the separate departments. Teresa Totter is the vice president who heads the sales and marketing area; she oversees 10 well-trained salespeople.

The accounting and finance division of the company is run by Ann Headman, who is the chief financial officer (CFO) and a company vice president. She is a member of the Institute of Management Accountants and holds a certificate in management accounting. She has a small staff of accountants, including a controller and a treasurer, and a staff of accounting input operators who maintain the financial records.

A partial list of Waterways' accounts and their balances for the month of November follows.

| | |
|---|---|
| Accounts Receivable | $ 275,000 |
| Advertising Expenses | 54,000 |
| Cash | 260,000 |
| Depreciation—Factory Equipment | 16,800 |
| Depreciation—Office Equipment | 2,400 |
| Direct Labor | 42,000 |
| Factory Supplies Used | 16,800 |
| Factory Utilities | 10,200 |
| Finished Goods Inventory, November 30 | 68,800 |
| Finished Goods Inventory, October 31 | 72,550 |
| Indirect Labor | 48,000 |
| Office Supplies Expense | 1,600 |
| Other Administrative Expenses | 72,000 |
| Prepaid Expenses | 41,250 |
| Raw Materials Inventory, November 30 | 52,700 |
| Raw Materials Inventory, October 31 | 38,000 |
| Raw Materials Purchases | 184,500 |
| Rent—Factory Equipment | 47,000 |
| Repairs—Factory Equipment | 4,500 |

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| | |
|---|---|
| Salaries | 325,000 |
| Sales Revenue | 1,350,000 |
| Sales Commissions | 40,500 |
| Work in Process Inventory, October 31 | 52,700 |
| Work in Process Inventory, November 30 | 42,000 |

### Instructions

**a.** Based on the information given, construct an organizational chart of Waterways Corporation.

**b.** A list of accounts and their values are given above. From this information, prepare a cost of goods manufactured schedule, an income statement, and a partial balance sheet for Waterways Corporation for the month of November.

## Expand Your Critical Thinking

### Decision-Making Across the Organization

**CT19.1** Wendall Company specializes in producing fashion outfits. On July 31, 2020, a tornado touched down at its factory and general office. The inventories in the warehouse and the factory were completely destroyed as was the general office nearby. Next morning, through a careful search of the disaster site, however, Bill Francis, the company's controller, and Elizabeth Walton, the cost accountant, were able to recover a small part of manufacturing cost data for the current month.

"What a horrible experience," sighed Bill "And the worst part is that we may not have enough records to use in filing an insurance claim."

"It was terrible," replied Elizabeth. "However, I managed to recover some of the manufacturing cost data that I was working on yesterday afternoon. The data indicate that our direct labor cost in July totaled $250,000 and that we had purchased $365,000 of raw materials. Also, I recall that the amount of raw materials used for July was $350,000. But I'm not sure this information will help. The rest of our records are blown away."

"Well, not exactly," said Bill. "I was working on the year-to-date income statement when the tornado warning was announced. My recollection is that our sales in July were $1,240,000 and our gross profit ratio has been 40% of sales. Also, I can remember that our cost of goods available for sale was $770,000 for July."

"Maybe we can work something out from this information!" exclaimed Elizabeth. "My experience tells me that our manufacturing overhead is usually 60% of direct labor."

"Hey, look what I just found," cried Elizabeth. "It's a copy of this June's balance sheet, and it shows that our inventories as of June 30 are Finished goods $38,000, Work in process $25,000, and Raw materials $19,000."

"Super," yelled Bill. "Let's go work something out."

In order to file an insurance claim, Wendall Company needs to determine the amount of its inventories as of July 31, 2020, the date of the tornado touchdown.

### Instructions

With the class divided into groups, determine the amount of cost in the Raw Materials, Work in Process, and Finished Goods inventory accounts as of the date of the tornado touchdown.

### Managerial Analysis

**CT19.2** Tenrack is a fairly large manufacturing company located in the southern United States. The company manufactures tennis rackets, tennis balls, tennis clothing, and tennis shoes, all bearing the company's distinctive logo, a large green question mark on a white flocked tennis ball. The company's sales have been increasing over the past 10 years.

The tennis racket division has recently implemented several advanced manufacturing techniques. Robot arms hold the tennis rackets in place while glue dries, and machine vision systems check for defects. The engineering and design team uses computerized drafting and testing of new products. The following managers work in the tennis racket division:

Jason Dennis, Sales Manager (supervises all sales representatives)
Peggy Groneman, Technical Specialist (supervises computer programmers)
Dave Marley, Cost Accounting Manager (supervises cost accountants)
Kevin Carson, Production Supervisor (supervises all manufacturing employees)
Sally Renner, Engineer (supervises all new-product design teams)

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### Instructions

**a.** What are the primary information needs of each manager?

**b.** Which, if any, financial accounting report(s) is each likely to use?

**c.** Name one special-purpose management accounting report that could be designed for each manager. Include the name of the report, the information it would contain, and how frequently it should be issued.

## Real-World Focus

**CT19.3** **The Institute of Management Accountants** (IMA) is an organization dedicated to excellence in the practice of management accounting and financial management.

### Instructions

Go to the IMA's website to locate the answers to the following questions.

**a.** How many members does the IMA have, and what are their job titles?

**b.** What are some of the benefits of joining the IMA as a student?

**c.** Use the chapter locator function to locate the IMA chapter nearest you, and find the name of the chapter president.

## Communication Activity

**CT19.4** Refer to P19.5A and add the following requirement.

Prepare a letter to the president of the company, Shelly Phillips, describing the changes you made. Explain clearly why net income is different after the changes. Keep the following points in mind as you compose your letter.

1. This is a letter to the president of a company, who is your friend. The style should be generally formal, but you may relax some requirements. For example, you may call the president by her first name.
2. Executives are very busy. Your letter should tell the president your main results first (for example, the amount of net income).
3. You should include brief explanations so that the president can understand the changes you made in the calculations.

## Ethics Case

**CT19.5** Steve Morgan, controller for Newton Industries, was reviewing production cost reports for the year. One amount in these reports continued to bother him—advertising. During the year, the company had instituted an expensive advertising campaign to sell some of its slower-moving products. It was still too early to tell whether the advertising campaign was successful.

There had been much internal debate as how to report advertising cost. The vice president of finance argued that advertising costs should be reported as a cost of production, just like direct materials and direct labor. He therefore recommended that this cost be identified as manufacturing overhead and reported as part of inventory costs until sold. Others disagreed. Morgan believed that this cost should be reported as an expense of the current period, so as not to overstate net income. Others argued that it should be reported as prepaid advertising and reported as a current asset.

The president finally had to decide the issue. He argued that these costs should be reported as inventory. His arguments were practical ones. He noted that the company was experiencing financial difficulty and expensing this amount in the current period might jeopardize a planned bond offering. Also, by reporting the advertising costs as inventory rather than as prepaid advertising, less attention would be directed to it by the financial community.

### Instructions

**a.** Who are the stakeholders in this situation?

**b.** What are the ethical issues involved in this situation?

**c.** What would you do if you were Steve Morgan?

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## All About You

**CT19.6** The primary purpose of managerial accounting is to provide information useful for management decisions. Many of the managerial accounting techniques that you learn in this course will be useful for decisions you make in your everyday life.

### Instructions

For each of the following managerial accounting techniques, read the definition provided and then provide an example of a personal situation that would benefit from use of this technique.

**a.** Break-even point (Chapter 22).

**b.** Budget (Chapter 24).

**c.** Balanced scorecard (Chapter 26).

**d.** Capital budgeting (Chapter 27).

## Considering Your Costs and Benefits

**CT19.7** As noted in this chapter, because of global competition, companies have become increasingly focused on reducing costs. To reduce costs and remain competitive, many companies are turning to outsourcing. Outsourcing means hiring an outside supplier to provide elements of a product or service rather than producing them internally.

Suppose you are the managing partner in a CPA firm with 30 full-time staff. Larger firms in your community have begun to outsource basic tax-return preparation work to India. Should you outsource your basic tax-return work to India as well? You estimate that you would have to lay off six staff members if you outsource the work. The basic arguments for and against are as follows.

**YES:** The wages paid to Indian accountants are very low relative to U.S. wages. You will not be able to compete unless you outsource.

**NO:** Tax-return data is highly sensitive. Many customers will be upset to learn that their data is being emailed around the world.

### Instructions

Write a response indicating your position regarding this situation. Provide support for your view.

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# Job Order Costing

## Chapter Preview

The following Feature Story about **Disney** describes how important accurate costing is to movie studios. In order to submit accurate bids on new film projects and to know whether it profited from past films, the company needs a good costing system. This chapter illustrates how costs are assigned to specific jobs, such as the production of *The Avengers 3*. We begin the discussion in this chapter with an overview of the flow of costs in a job order cost accounting system. We then use a case study to explain and illustrate the documents, entries, and accounts in this type of cost accounting system.

## Feature Story

### Profiting from the Silver Screen

Have you ever had the chance to tour a movie studio? There's a lot going on! Lots of equipment and lots of people with a variety of talents. Running a film studio, whether as an independent company or part of a major corporation, is a complex and risky business. Consider **Disney**, which has produced such classics as *Snow White and the Seven Dwarfs* and such colossal successes as *Frozen*. The movie studio has, however, also seen its share of losses. Disney's *Lone Ranger* movie brought in revenues of $260 million, but its production and marketing costs were a combined $375 million—a loss of $115 million.

Every time Disney or another movie studio makes a new movie, it is creating a unique product. Ideally, each new movie should be able to stand on its own, that is, the film should generate revenues that exceed its costs. In order to know

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whether a particular movie is profitable, the studio must keep track of all of the costs incurred to make and market the film. These costs include such items as salaries of the writers, actors, director, producer, and production team (e.g., film crew); licensing costs; depreciation on equipment; music; studio rental; and marketing and distribution costs. If you've ever watched the credits at the end of a movie, you know the list goes on and on.

The movie studio isn't the only one with an interest in knowing a particular project's profitability. Many of the people involved in making the movie, such as the screenwriters, actors, and producers, have at least part of their compensation tied to its profitability. As such, complaints about inaccurate accounting are common in the movie industry.

In particular, a few well-known and widely attended movies reported low profits, or even losses, once the accountants got done with them. How can this be? The issue is that a large portion of a movie's costs are overhead costs that can't be directly traced to a film, such as depreciation of film equipment and sets, facility maintenance costs, and executives' salaries. Actors and others often complain that these overhead costs are overallocated to their movie and therefore negatively affect their compensation.

To reduce the risk of financial flops, many of the big studios now focus on making sequels of previous hits. This might explain why, shortly after losing money on the *Lone Ranger*, Disney decided to make *The Avengers 2* and is now working on *The Avengers 3*—much safer bets.

**Video** **Watch the *Making a Hollywood Movie* video in WileyPLUS to learn more about job order costing in the real world.**

# Chapter Outline

## LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Describe cost systems and the flow of costs in a job order system. | • Process cost system<br>• Job order cost system<br>• Job order cost flow<br>• Accumulating costs | **DO IT! 1** Accumulating Manufacturing Costs |
| **LO 2** Use a job cost sheet to assign costs to work in process. | • Raw materials costs<br>• Factory labor costs | **DO IT! 2** Work in Process |
| **LO 3** Demonstrate how to determine and use the predetermined overhead rate. | • Predetermined overhead rate<br>• Applying manufacturing overhead | **DO IT! 3** Predetermined Overhead Rate |
| **LO 4** Prepare entries for manufacturing and service jobs completed and sold. | • Finished goods<br>• Cost of goods sold<br>• Summary of job order cost flows<br>• Job order for service companies<br>• Pros and cons of job order costing | **DO IT! 4** Completion and Sale of Jobs |
| **LO 5** Distinguish between under- and overapplied manufacturing overhead. | • Under- or overapplied manufacturing overhead | **DO IT! 5** Applied Manufacturing Overhead |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with Orion for additional tutorials and practice opportunities.**

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# Cost Accounting Systems

**LEARNING OBJECTIVE 1**

Describe cost systems and the flow of costs in a job order system.

**Cost accounting** involves measuring, recording, and reporting product and service costs. Companies determine both the total cost and the unit cost of each product. The accuracy of the product cost information is critical to the success of the company. Companies use this information to determine which products to produce, what prices to charge, and how many units to produce. Accurate product cost information is also vital for effective evaluation of employee performance.

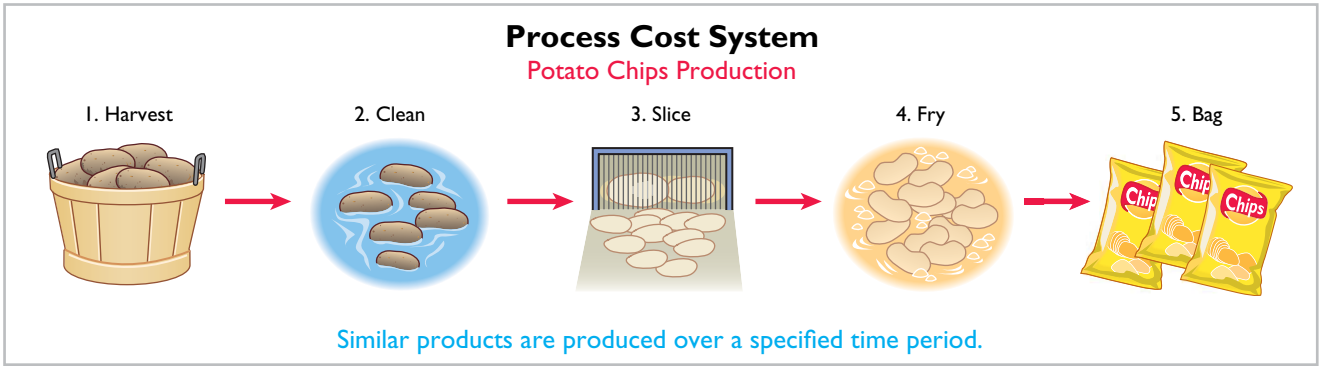
A **cost accounting system** consists of accounts for the various manufacturing and service costs. These accounts are fully integrated into the general ledger of a company. An important feature of a cost accounting system is the use of **a perpetual inventory system**. Such a system **provides immediate, up-to-date information on the cost of a product**.

There are two basic types of cost accounting systems: (1) a process cost system and (2) a job order cost system. Although cost accounting systems differ widely from company to company, most involve one of these two traditional product costing systems.

## Process Cost System

A company uses a **process cost system** when it manufactures a large volume of similar products. Production is continuous. Examples of a process cost system are the manufacture of cereal by **Kellogg**, the refining of petroleum by **ExxonMobil**, and the production of ice cream by **Ben & Jerry's**. Process costing accumulates product-related costs **for a period of time** (such as a week or a month) instead of assigning costs to specific products or job orders. In process costing, companies assign the costs to departments or processes for the specified period of time. **Illustration 20.1** shows examples of the use of a process cost system. We will discuss the process cost system further in Chapter 21.

**ILLUSTRATION 20.1** **Process cost system**




## Job Order Cost System

Under a **job order cost system**, the company assigns costs to each **job** or to each **batch** of goods. An example of a job is the manufacture of a jet by **Boeing**, the production of a movie by **Disney**, or the making of a fire truck by **American LaFrance**. An example of a batch is the printing of 225 wedding invitations by a local print shop, or the printing of a weekly issue of *Fortune* magazine by a high-tech printer such as **Quad Graphics**.

An important feature of job order costing is that each job or batch has its own distinguishing characteristics. For example, each house is custom built, each consulting engagement by a CPA firm is unique, and each printing job is different. **The objective is to compute the cost**

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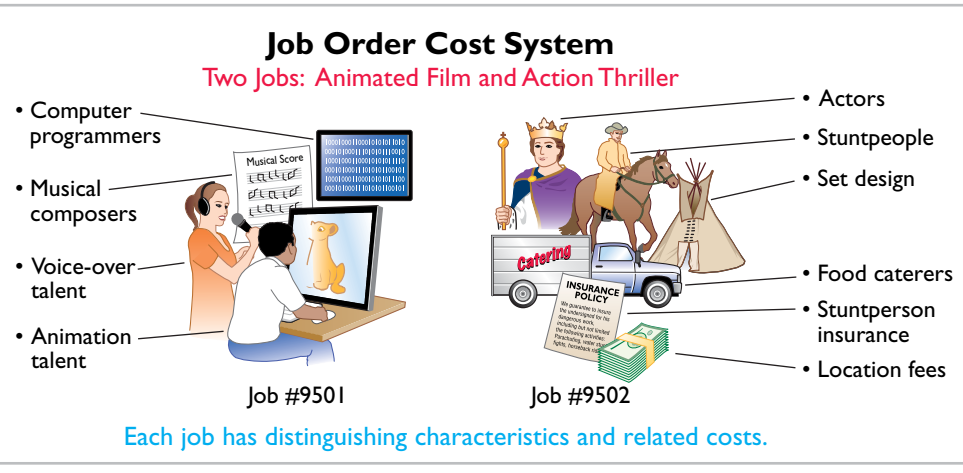
**per job.** At each point in manufacturing a product or performing a service, the company can identify the job and its associated costs. A job order cost system measures costs for each job, rather than for set time periods. **Illustration 20.2** shows the recording of costs in a job order cost system for Disney as it produced two different films at the same time: an animated film and an action thriller.

**ILLUSTRATION 20.2**
**Job order cost system for Disney**




Can a company use both job order and process cost systems? Yes. For example, **General Motors** uses process cost accounting for its standard model cars, such as Malibus and Corvettes, and job order cost accounting for a custom-made limousine for the President of the United States.

The objective of both cost accounting systems is to provide unit cost information for product pricing, cost control, inventory valuation, and financial statement presentation.

## Management Insight

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### Jobs Won, Money Lost

Many companies suffer from poor cost accounting. As a result, they sometimes make products they should not be selling at all, or they buy product components that they could more profitably make themselves. Also, inaccurate cost data leads companies to misallocate capital and frustrates efforts by plant managers to improve efficiency.

For example, consider the case of a diversified company in the business of rebuilding diesel locomotives. The managers thought they were making money, but a consulting firm found that the company had seriously underestimated costs. The company bailed out of the business and not a moment too soon. Says the consultant who advised the company, "The more contracts it won, the more money it lost." Given that situation, a company cannot stay in business very long!

**What type of costs do you think the company had been underestimating? (Go to WileyPLUS for this answer and additional questions).**

# Job Order Cost Flow

We first address the flow of costs for a manufacturer (service company costs are addressed in a later section). The flow of costs (direct materials, direct labor, and manufacturing overhead) in job order cost accounting parallels the physical flow of the materials as they are converted into finished goods and then sold. As shown in **Illustration 20.3**, companies first **accumulate** manufacturing costs in the form of raw materials, factory labor, or manufacturing overhead. They then **assign** manufacturing costs to the Work in Process Inventory account. When a job is completed, the company transfers the cost of the job to Finished Goods Inventory. Later when the goods are sold, the company transfers their cost to Cost of Goods Sold.

Illustration 20.3 provides a basic overview of the flow of costs in a manufacturing setting for production of a fire truck. A more detailed presentation of the flow of costs is summarized near the end of this chapter in Illustration 20.15. There are two major steps in the flow of costs: (1) *accumulating* the manufacturing costs incurred, and (2) *assigning* the accumulated costs

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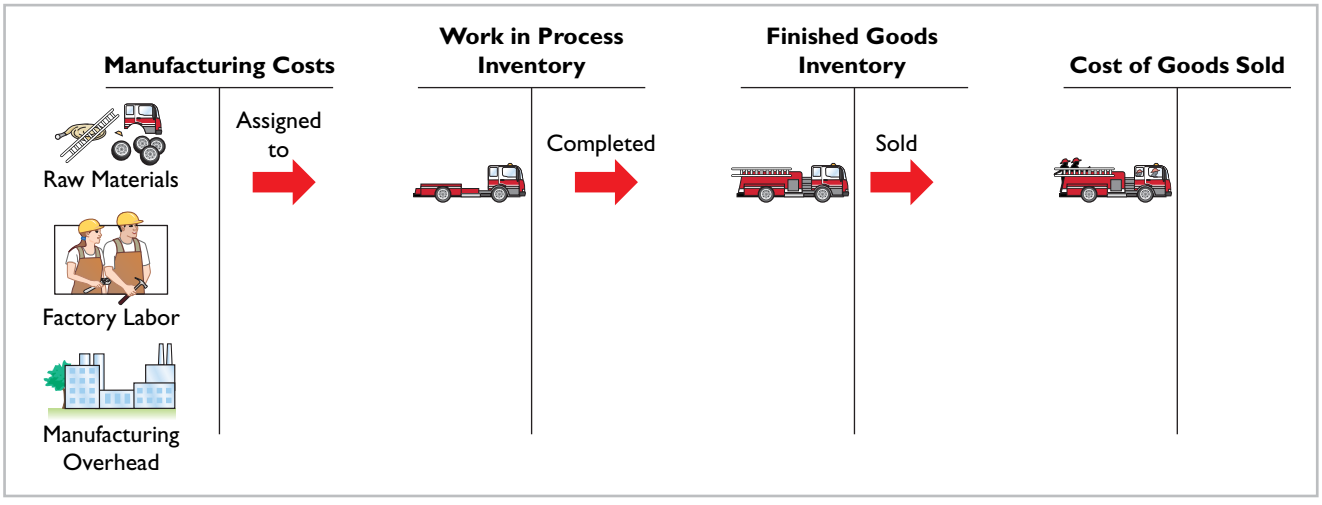
**ILLUSTRATION 20.3** **Flow of costs in job order costing**




to the work done. The following discussion shows that the company accumulates manufacturing costs incurred by debits to Raw Materials Inventory, Factory Labor, and Manufacturing Overhead. When the company incurs these costs, it does not attempt to associate the costs with specific jobs. The company makes additional entries to assign manufacturing costs incurred to specific jobs. In the remainder of this chapter, we will use a case study to explain how a job order cost system operates.

# Accumulating Manufacturing Costs

To illustrate a job order cost system, we will use the January transactions of Wallace Company, which makes custom electronic sensors for corporate safety applications (such as fire and carbon monoxide) and security applications (such as theft and corporate espionage).

## Raw Materials Costs

When Wallace receives the raw materials (both direct and indirect) it has purchased from a supplier, **it debits the cost of the materials to Raw Materials Inventory**. The company debits this account for the invoice cost of the raw materials and freight costs chargeable to the purchaser. It credits the account for purchase discounts taken and purchase returns and allowances. Wallace makes **no effort at this point to associate the cost of materials with specific jobs or orders**.

To illustrate, assume that Wallace purchases 2,000 lithium batteries (Stock No. AA2746) at $5 per unit ($10,000) and 800 electronic modules (Stock No. AA2850) at $40 per unit ($32,000) for a total cost of $42,000 ($10,000 + $32,000). The entry to record this purchase on January 4 is:

| | | (1)[1] | | |
|---|---|---|---|---|
| Jan. 4 | Raw Materials Inventory | 42,000 | | |
| | Accounts Payable | | 42,000 | |
| | (Purchase of raw materials on account) | | | |

**Raw Materials Inventory**

| | |
|---|---|
| 42,000 | |

At this point, Raw Materials Inventory has a balance of $42,000, as shown in the T-account. As we will explain later in the chapter, the company subsequently assigns direct raw materials inventory to work in process and indirect raw materials inventory to manufacturing overhead.

[1] The numbers placed above the entries for Wallace Company are used for reference purposes in the summary provided in Illustration 20.15.

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## Factory Labor Costs

Some of a company's employees are involved in the manufacturing process, while others are not. As discussed in Chapter 19, wages and salaries of nonmanufacturing employees are expensed as period costs (e.g., Salaries and Wages Expense). Costs related to manufacturing employees are accumulated in Factory Labor to ensure their treatment as product costs. Factory labor consists of three costs: (1) wages payable related to factory workers, (2) employer payroll taxes on these wages, and (3) fringe benefits (such as sick pay, pensions, and vacation pay) incurred by the employer. **Companies debit labor costs to Factory Labor as they incur those costs.**

To illustrate, assume that Wallace incurs $32,000 of factory labor costs. Of that amount, $27,000 relates to wages payable and $5,000 relates to payroll taxes payable in February. The entry to record factory labor (both direct and indirect) for the month is:

| Factory Labor | | | | | |
|---|---|---|---|---|---|
| 32,000 | | | | | |

(2)

| | | | |
|---|---|---|---|
| Jan. 31 | Factory Labor | 32,000 | |
| | Factory Wages Payable | | 27,000 |
| | Employer Payroll Taxes Payable | | 5,000 |
| | (To record factory labor costs) | | |

At this point, Factory Labor has a balance of $32,000, as shown in the T-account. The company subsequently assigns direct factory labor to work in process and indirect factory labor to manufacturing overhead.

## Manufacturing Overhead Costs

A company has many types of overhead costs. If these overhead costs, such as property taxes, depreciation, insurance, and repairs, relate to overhead costs of a nonmanufacturing facility, such as an office building, then these costs are expensed as period costs (e.g., Property Tax Expense, Depreciation Expense, Insurance Expense, and Maintenance and Repairs Expense). If the costs relate to the manufacturing process, then they are accumulated in Manufacturing Overhead to ensure their treatment as product costs.

Using assumed data, the summary entry for manufacturing overhead (other than indirect materials and indirect labor) in Wallace Company is:

| Manufacturing Overhead | | | | | |
|---|---|---|---|---|---|
| 13,800 | | | | | |

(3)

| | | | |
|---|---|---|---|
| Jan. 31 | Manufacturing Overhead | 13,800 | |
| | Utilities Payable | | 4,800 |
| | Prepaid Insurance | | 2,000 |
| | Accounts Payable (for repairs) | | 2,600 |
| | Accumulated Depreciation | | 3,000 |
| | Property Taxes Payable | | 1,400 |
| | (To record overhead costs) | | |

At this point, Manufacturing Overhead has a balance of $13,800, as shown in the T-account. The company subsequently assigns manufacturing overhead to work in process.

### DO IT! 1 | Accumulating Manufacturing Costs

During the current month, Ringling Company incurs the following manufacturing costs:

**a.** Raw material purchases of $4,200 on account.

**b.** Factory labor of $18,000. Of that amount, $15,000 relates to wages payable and $3,000 relates to payroll taxes payable.

**c.** Factory utilities of $2,200 are payable, prepaid factory insurance of $1,800 has expired, and depreciation on the factory building is $3,500.

Prepare journal entries for each type of manufacturing cost.

**ACTION PLAN**

- **In accumulating manufacturing costs, debit at least one of three accounts: Raw Materials Inventory, Factory Labor, and Manufacturing Overhead.**

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**Solution**

| | | | |
|---|---|---|---|
| **a.** | Raw Materials Inventory | 4,200 | |
| | Accounts Payable | | 4,200 |
| | (Purchases of raw materials on account) | | |
| **b.** | Factory Labor | 18,000 | |
| | Factory Wages Payable | | 15,000 |
| | Employer Payroll Taxes Payable | | 3,000 |
| | (To record factory labor costs) | | |
| **c.** | Manufacturing Overhead | 7,500 | |
| | Utilities Payable | | 2,200 |
| | Prepaid Insurance | | 1,800 |
| | Accumulated Depreciation | | 3,500 |
| | (To record overhead costs) | | |

Related exercise material: **BE20.1, BE20.2, DO IT! 20.1, E20.1, E20.7, E20.8, and E20.11.**

**ACTION PLAN (*cont.*)**

- **Manufacturing overhead costs may be recognized daily. Or, manufacturing overhead may be recorded periodically through a summary entry.**

# Assigning Manufacturing Costs

**LEARNING OBJECTIVE 2**

Use a job cost sheet to assign costs to work in process.

Assigning manufacturing costs to work in process results in the following entries.

1. **Debits** made to Work in Process Inventory.
2. **Credits** made to Raw Materials Inventory, Factory Labor, and Manufacturing Overhead.

An essential accounting record in assigning costs to jobs is a **job cost sheet**, as shown in Illustration 20.4. A **job cost sheet** is a form used to record the costs chargeable to a specific job and to determine the total and unit costs of the completed job.

**ILLUSTRATION 20.4**
**Job cost sheet**

**Job Cost Sheet**

Job No. _____ Quantity _____
Item _____ Date Requested _____
For _____ Date Completed _____

| Date | Direct Materials | Direct Labor | Manufacturing Overhead |
|---|---|---|---|
| | | | |

Cost of completed job
Direct materials $ _____
Direct labor _____
Manufacturing overhead _____
Total cost $ _____
Unit cost (total dollars quantity) $ _____

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Companies keep a separate job cost sheet for each job, typically as a computer file. The job cost sheets constitute the subsidiary ledger for the Work in Process Inventory control account in the general ledger. A **subsidiary ledger** consists of individual records for each individual item—in this case, each job. The Work in Process account is referred to as a **control account** because it summarizes the detailed data regarding specific jobs contained in the job cost sheets. **Each entry to Work in Process Inventory must be accompanied by a corresponding posting to one or more job cost sheets.**

## Raw Materials Costs

**ETHICS NOTE**

**Approvals are an important internal control feature of a requisition slip because they establish individual accountability over inventory.**

**Companies assign raw materials costs to jobs when their materials storeroom issues the materials in response to requests.** Requests for issuing raw materials are made by production department personnel on a prenumbered **materials requisition slip**. The materials issued may be used directly on a job, or they may be considered indirect materials. As **Illustration 20.5** shows, the requisition should indicate the quantity and type of materials withdrawn and the account to be charged (see **Ethics Note**). Note in Illustration 20.5 the specific job to be charged (Job No. 101) as well as the internal control of prenumbering (R247) to enhance accountability. The company will charge direct materials to Work in Process Inventory, and indirect materials to Manufacturing Overhead.

**ILLUSTRATION 20.5**
**Materials requisition slip**

Wallace Company
**Materials Requisition Slip**

Deliver to: Assembly Department — Req. No. R247
Charge to: Work in Process–Job No. 101 — Date: 1/6/20

| Quantity | Description | Stock No. | Cost per Unit | Total |
|---|---|---|---|---|
| 200 | Lithium batteries | AA2746 | $5.00 | $1,000 |

Requested by Bruce Havarst — Received by Herb Crowley
Approved by Kap Shin — Costed by Heather Remmers

The company may use any of the inventory costing methods (FIFO, LIFO, or average-cost) in costing the requisitions **to the individual job cost sheets**. In an automated system, the requisition is entered electronically. Once approved and delivered to production, the materials are charged automatically to an electronic job cost record.

Periodically, the company journalizes the requisitions. For example, if Wallace uses $24,000 of direct materials and $6,000 of indirect materials in January, the entry on January 31 is:

(4)

| | | | |
|---|---|---|---|
| Jan. 31 | Work in Process Inventory | 24,000 | |
| | Manufacturing Overhead | 6,000 | |
| | Raw Materials Inventory | | 30,000 |
| | (To assign materials to jobs and overhead) | | |

This entry reduces Raw Materials Inventory by $30,000, increases Work in Process Inventory by $24,000 as the direct costs are assigned to jobs, and increases Manufacturing Overhead by $6,000, as the following shows.

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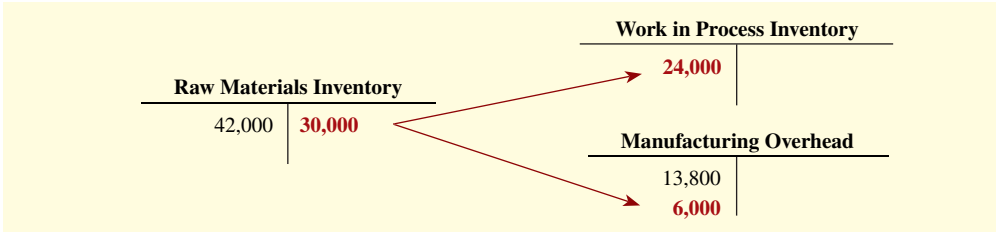


**Illustration 20.6** shows the posting of requisition slip R247 to Job No. 101 for $1,000 and other assumed postings to the job cost sheets for materials. The requisition slips provide the basis for total direct materials costs of $12,000 for Job No. 101, $7,000 for Job No. 102, and

**ILLUSTRATION 20.6** **Job cost sheets–posting of direct materials**

Wallace Company
**Materials Requisition Slip**
Deliver to: Assembly Department Req. No. R251

Wallace Company
**Materials Requisition Slip**
Deliver to: Assembly Department Req. No. R250

Wallace Company
**Materials Requisition Slip**
Deliver to: Assembly Department Req. No. R249

Wallace Company
**Materials Requisition Slip**
Deliver to: Assembly Department R248
Charge to: Work in Process–Job No. 102 1/10/20
Total $3,800

Wallace Company
**Materials Requisition Slip**
Deliver to: Assembly Department R247
Charge to: Work in Process–Job No. 101 1/6/20

| Quantity | Description | Stock No. | Cost per Unit | Total |
|---|---|---|---|---|
| 200 | Lithium batteries | AA2746 | $5.00 | $1,000 |

Requested by Bruce Hayward Received by Hank Crowley
Approved by Kay Winn Costed by Heather Remmers

Source documents for posting to job cost sheets and Work in Process Inventory: Materials requisition slips

Post individual direct materials requisition slips to job cost sheets

SUBSIDIARY LEDGER
Job Cost Sheets

Job No. 101 Quantity 1,000 Units

| Date | Direct Materials | Direct Labor | Manufacturing Overhead |
|---|---|---|---|
| 1/6 | 1,000 | | |
| 1/12 | 7,000 | | |
| 1/26 | 4,000 | | |
| | 12,000 | | |

Job No. 102 Quantity 1,500 Units

| Date | Direct Materials | Direct Labor | Manufacturing Overhead |
|---|---|---|---|
| 1/10 | 3,800 | | |
| 1/17 | 3,200 | | |
| | 7,000 | | |

Job No. 103 Quantity 2,000 Units

| Date | Direct Materials | Direct Labor | Manufacturing Overhead |
|---|---|---|---|
| 1/27 | 5,000 | | |
| | 5,000 | | |

Post total direct materials requisition slips to Work in Process Inventory

GENERAL LEDGER

**Work in Process Inventory**

| | | | |
|---|---|---|---|
| 1/31 | 24,000 | | |

Prove the $24,000 direct materials charge to Work in Process Inventory by totaling the charges by jobs:

| | |
|---|---|
| 101 | $12,000 |
| 102 | 7,000 |
| 103 | 5,000 |
| | $24,000 |

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$5,000 for Job No. 103. After the company has completed all postings, the sum of the direct materials columns of the job cost sheets (the **subsidiary** account amounts of $12,000, $7,000, and $5,000) should equal the direct materials debited to Work in Process Inventory (the **control** account amount of $24,000).

## Management Insight IHS

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### The Cost of an iPhone? Just Tear One Apart

All companies need to know what it costs to make their own products—but a lot of companies would also like to know the cost of their competitors' products as well. That's where **IHS** steps in. IHS tears apart sophisticated electronic devices to tell you what it would cost to replicate.

In the case of smartphones, which often have more than 1,000 tiny components, that is no small feat. For example, consider that the components of a recent iPhone model cost about $221. Assembly adds only about another $5. However, the difference between what you pay (almost triple the total component cost) and the "cost" is not all profit. You also have to consider the additional nonproduction costs of research, design, marketing, patent fees, and selling costs.

**Source:** 2016 IHS Markit; *https://9to5mac.com/2016/09/20/649-iphone-7-estimated-to-cost-apple-220-heres-the-component-breakdown.*

**What type of costs are marketing and selling costs, and how are they treated for accounting purposes? (Go to WileyPLUS for this answer and additional questions).**

## Factory Labor Costs

**Companies assign factory labor costs to jobs on the basis of time tickets prepared when the work is performed.** The **time ticket** indicates the employee, the hours worked, the account and job to be charged, and the total labor cost. Many companies accumulate these data through the use of bar coding and scanning devices. When they start and end work, employees scan bar codes on their identification badges and bar codes associated with each job they work on. When direct labor is involved, the time ticket must indicate the job number, as shown in **Illustration 20.7**. The employee's supervisor should approve all time tickets.

**ILLUSTRATION 20.7**
**Time ticket**

Wallace Company
**Time Ticket**

Date: 1/6/20

Employee: John Nash — Employee No.: 124

Charge to: Work in Process — Job No.: 101

| Time | | | Hourly Rate | Total Cost |
|---|---|---|---|---|
| Start | Stop | Total Hours | | |
| 0800 | 1200 | 4 | 10.00 | 40.00 |

Approved by: Bob Kadlec — Costed by: M Chen

In an automated system, after factory employees scan their identification codes, labor costs are automatically posted to specific jobs at the appropriate pay scale. The time tickets are later sent to the payroll department, which applies the employee's hourly wage rate plus fringe benefits and computes the total labor cost. Finally, the company journalizes the time tickets. It debits the

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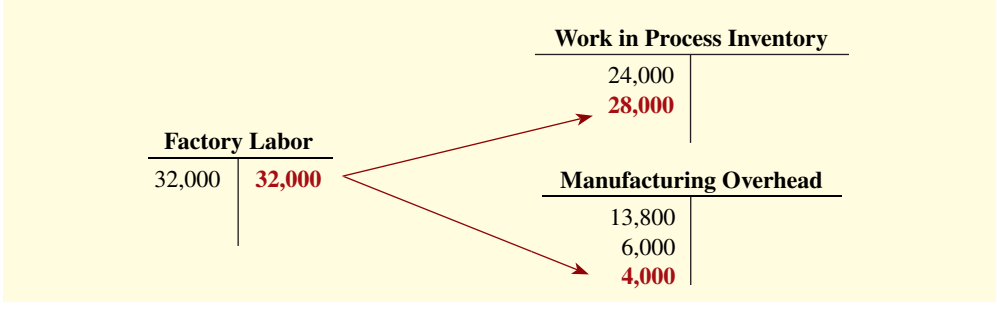
account Work in Process Inventory for direct labor and debits Manufacturing Overhead for indirect labor. For example, if the $32,000 total factory labor cost consists of $28,000 of direct labor and $4,000 of indirect labor, the entry is:

(5)

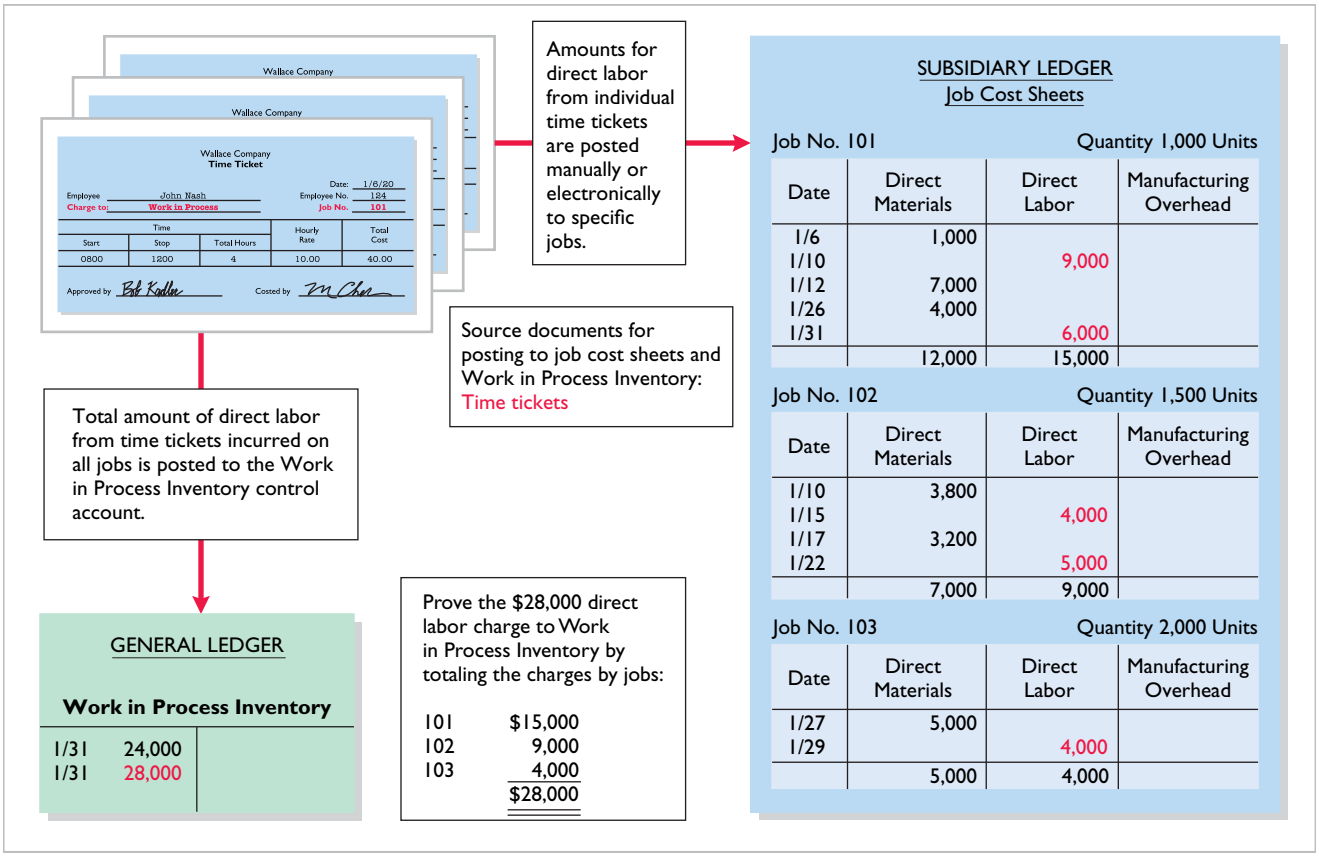
| | | | |
|---|---|---|---|
| Jan. 31 | Work in Process Inventory | 28,000 | |
| | Manufacturing Overhead | 4,000 | |
| | Factory Labor | | 32,000 |
| | (To assign labor to jobs and overhead) | | |

As a result of this entry, Factory Labor is reduced by $32,000 so it has a zero balance, and labor costs are assigned to the appropriate manufacturing accounts. The entry increases Work in Process Inventory by $28,000 and increases Manufacturing Overhead by $4,000, as shown below.




Let's assume that the labor costs chargeable to Wallace's three jobs are $15,000, $9,000, and $4,000. **Illustration 20.8** shows the Work in Process Inventory and job cost sheets after

**ILLUSTRATION 20.8** **Job cost sheets–direct labor**


Wallace Company
Wallace Company
Wallace Company
Time Ticket
Employee John Nash
Charge to: Work in Process
Date: 1/6/20
Employee No. 184
Job No. 101
Time
Start 0800
Stop 1200
Total Hours 4
Hourly Rate 10.00
Total Cost 40.00
Approved by Bob Keller
Costed by M Chen
Amounts for direct labor from individual time tickets are posted manually or electronically to specific jobs.
Source documents for posting to job cost sheets and Work in Process Inventory: Time tickets
Total amount of direct labor from time tickets incurred on all jobs is posted to the Work in Process Inventory control account.
GENERAL LEDGER
Work in Process Inventory
1/31 24,000
1/31 28,000
Prove the $28,000 direct labor charge to Work in Process Inventory by totaling the charges by jobs:
101 $15,000
102 9,000
103 4,000
$28,000
SUBSIDIARY LEDGER
Job Cost Sheets
Job No. 101 Quantity 1,000 Units
Date | Direct Materials | Direct Labor | Manufacturing Overhead
1/6 1,000
1/10 9,000
1/12 7,000
1/26 4,000
1/31 6,000
12,000 15,000
Job No. 102 Quantity 1,500 Units
Date | Direct Materials | Direct Labor | Manufacturing Overhead
1/10 3,800
1/15 4,000
1/17 3,200
1/22 5,000
7,000 9,000
Job No. 103 Quantity 2,000 Units
Date | Direct Materials | Direct Labor | Manufacturing Overhead
1/27 5,000
1/29 4,000
5,000 4,000

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posting. As in the case of direct materials, the sum of the postings to the direct labor columns of the job cost sheets (subsidiary accounts Job 101 $15,000, Job 102 $9,000, and Job 103 $4,000) should equal the posting of direct labor to the Work in Process Inventory control account ($28,000). Also, time card and job ticket hours should be periodically reconciled as an internal control.

### DO IT! 2 | Work in Process

Danielle Company is working on two job orders. The job cost sheets show the following:

Direct materials—Job 120 $6,000; Job 121 $3,600
Direct labor—Job 120 $4,000; Job 121 $2,000
Manufacturing overhead—Job 120 $5,000; Job 121 $2,500

Prepare the three summary entries to record the assignment of costs to Work in Process from the data on the job cost sheets.

**ACTION PLAN**

- Recognize that Work in Process Inventory is the control account for all unfinished job cost sheets.
- Debit Work in Process Inventory for the materials, labor, and overhead charged to the job cost sheets.
- Credit the accounts that were debited when the manufacturing costs were accumulated.

**Solution**

The three summary entries are:

| | | |
|---|---|---|
| Work in Process Inventory ($6,000 + $3,600) | 9,600 | |
| Raw Materials Inventory | | 9,600 |
| (To assign materials to jobs) | | |
| Work in Process Inventory ($4,000 + $2,000) | 6,000 | |
| Factory Labor | | 6,000 |
| (To assign labor to jobs) | | |
| Work in Process Inventory ($5,000 + $2,500) | 7,500 | |
| Manufacturing Overhead | | 7,500 |
| (To assign overhead to jobs) | | |

Related exercise material: **BE20.3, BE20.4, BE20.5, DO IT! 20.2, E20.2, E20.7, and E20.8.**

## Predetermined Overhead Rates

**LEARNING OBJECTIVE 3**

Demonstrate how to determine and use the predetermined overhead rate.

Companies charge the actual costs of direct materials and direct labor to specific jobs because these costs can be directly traced to specific jobs. In contrast, manufacturing **overhead** relates to production operations **as a whole**. As a result, overhead costs cannot be assigned to specific jobs on the basis of actual costs incurred because these costs cannot be traced to (identified with) specific jobs. Instead, companies assign manufacturing overhead to work in process and to specific jobs **on an estimated basis through the use of a predetermined overhead rate**.

The **predetermined overhead rate** is based on the relationship between estimated annual overhead costs and estimated annual operating activity, expressed in terms of a common **activity base**. The company may state the activity in terms of direct labor costs, direct labor hours, machine hours, or any other measure that will provide an equitable basis for applying overhead costs to jobs. Companies establish the predetermined overhead rate at the beginning of the year. Small companies often use a single, company-wide predetermined overhead rate. Large companies often use rates that vary from department to department. The formula for a predetermined overhead rate is shown in **Illustration 20.9**.

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| Estimated Annual Overhead Costs | ÷ | Estimated Annual Operating Activity | = | Predetermined Overhead Rate |
|---|---|---|---|---|

**ILLUSTRATION 20.9**
**Formula for predetermined overhead rate**

Overhead consists only of indirect costs and relates to production operations as a whole. To know what "the whole" is, it might seem that the logical thing is to wait until the end of the year's operations. At that time, the company knows all of its actual costs for the period. As a practical matter, though, managers cannot wait until the end of the year. To price products effectively as they are completed, managers need information about product costs of specific jobs completed during the year. Using an estimated predetermined overhead rate enables a cost to be determined for the job immediately and identifies when actual costs may be different than planned. **Illustration 20.10** indicates how manufacturing overhead is assigned to work in process.

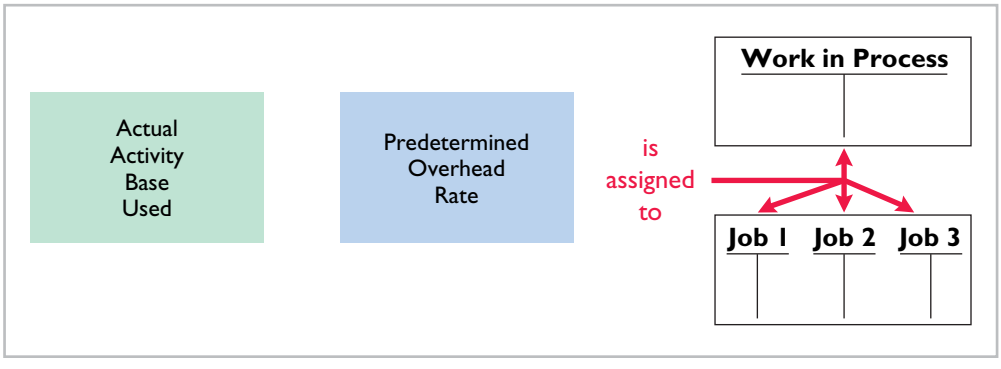


**ILLUSTRATION 20.10**
**Using predetermined overhead rates**

Wallace Company uses direct labor cost as the activity base. Assuming that the company estimates annual overhead costs to be $280,000 and direct labor costs for the year to be $350,000, the overhead rate is 80%, computed as shown in **Illustration 20.11**.

| Estimated Annual Overhead Costs | ÷ | Estimated Direct Labor Cost | = | Predetermined Overhead Rate |
|---|---|---|---|---|
| $280,000 | ÷ | $350,000 | = | 80% |

**ILLUSTRATION 20.11**
**Calculation of predetermined overhead rate**

This means that for every dollar of direct labor, Wallace will assign 80 cents of manufacturing overhead to a job. The use of a predetermined overhead rate enables the company to determine the approximate total cost of each job **when it completes the job**.

Historically, companies used direct labor costs or direct labor hours as the activity base. The reason was the relatively high correlation between direct labor and manufacturing overhead. Today, more companies are using **machine hours as the activity base, due to increased reliance on automation in manufacturing operations**. Or, as mentioned in Chapter 19, many companies now use activity-based costing to more accurately assign overhead costs based on the activities that give rise to the costs.

A company may use more than one activity base. For example, if a job is manufactured in more than one factory department, each department may have its own overhead rate. In the Feature Story, **Disney** might use two bases in assigning overhead to film jobs: direct materials dollars for indirect materials, and direct labor hours for such costs as insurance and supervisor salaries.

Wallace Company applies manufacturing overhead to work in process after it assigns direct labor costs. It also applies manufacturing overhead to specific jobs at that time. For January, Wallace applied overhead of $22,400 in response to its assignment of $28,000

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of direct labor costs (direct labor cost of $28,000 × 80%). The following entry records this application.

(6)

| | | | |
|---|---|---|---|
| Jan. 31 | Work in Process Inventory | 22,400 | |
| | Manufacturing Overhead | | 22,400 |
| | (To assign overhead to jobs) | | |

This entry reduces the balance in Manufacturing Overhead and increases Work in Process Inventory by $22,400, as shown below.

| Manufacturing Overhead | | Work in Process Inventory | |
|---|---|---|---|
| 13,800 | 22,400 | 24,000 | |
| 6,000 | | 28,000 | |
| 4,000 | | 22,400 | |
| 1,400 | | | |

The overhead that Wallace applies to each job will be 80% of the direct labor cost of the job for the month. **Illustration 20.12** shows the Work in Process Inventory account and the job cost sheets after posting. Note that the debit of $22,400 to Work in Process Inventory equals the sum of the overhead applied to jobs: Job No. 101 $12,000 1 Job No. 102 $7,200 1 Job No. 103 $3,200.

**ILLUSTRATION 20.12** **Job cost sheets–manufacturing overhead applied**

SUBSIDIARY LEDGER
Job Cost Sheets

Job No. 101 Quantity 1,000 Units

| Date | Direct Materials | Direct Labor | Manufacturing Overhead | Total |
|---|---|---|---|---|
| 1/6 | 1,000 | | | |
| 1/10 | | 9,000 | 7,200 | |
| 1/12 | 7,000 | | | |
| 1/26 | 4,000 | | | |
| 1/31 | | 6,000 | 4,800 | |
| | 12,000 | 15,000 | 12,000 | 39,000 |

Job No. 102 Quantity 1,500 Units

| Date | Direct Materials | Direct Labor | Manufacturing Overhead | Total |
|---|---|---|---|---|
| 1/10 | 3,800 | | | |
| 1/15 | | 4,000 | 3,200 | |
| 1/17 | 3,200 | | | |
| 1/22 | | 5,000 | 4,000 | |
| | 7,000 | 9,000 | 7,200 | 23,200 |

Job No. 103 Quantity 2,000 Units

| Date | Direct Materials | Direct Labor | Manufacturing Overhead | Total |
|---|---|---|---|---|
| 1/27 | 5,000 | | | |
| 1/29 | | 4,000 | 3,200 | |
| | 5,000 | 4,000 | 3,200 | 12,200 |

Post manufacturing overhead to each job at the time direct labor is posted using the predetermined rate: 80% of direct labor cost (e.g., $9,000 x .80 = $7,200)

Post manufacturing overhead to Work in Process Inventory using predetermined rate: 80% of direct labor cost (e.g., $28,000 x .80 = $22,400)

GENERAL LEDGER

**Work in Process Inventory**

| | | |
|---|---|---|
| 1/31 | 24,000 | |
| 1/31 | 28,000 | |
| 1/31 | 22,400 | |

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After posting the credit of $22,400 to manufacturing overhead, a debit balance remains. This means that the overhead applied to jobs using the predetermined rate was less than the actual amount of overhead incurred during the period. This situation is referred to as underapplied overhead. We address the treatment of under- and overapplied overhead in a later section.

At the end of each month, the **balance in Work in Process Inventory should equal the sum of the costs shown on the job cost sheets of unfinished jobs**. Illustration 20.13 presents proof of the agreement of the control and subsidiary accounts in Wallace. (It assumes that all jobs are still in process.)

| Work in Process Inventory | | | Job Cost Sheets | |
|---|---|---|---|---|
| Jan. 31 | 24,000 | | No. 101 | $ 39,000 |
| 31 | 28,000 | | 102 | 23,200 |
| 31 | 22,400 | | 103 | 12,200 |
| | 74,400 | ← | | $74,400 |

**ILLUSTRATION 20.13**
**Proof of job cost sheets to work in process inventory**

## DO IT! 3 | Predetermined Overhead Rate

Stanley Company produces specialized safety devices. For the year, manufacturing overhead costs are estimated to be $160,000. Estimated machine usage is 40,000 hours. The company assigns overhead based on machine hours. Job No. 302 used 2,000 machine hours.

Compute the predetermined overhead rate, determine the amount of overhead to apply to Job No. 302, and prepare the entry to apply overhead to Job No. 302 on March 31.

**ACTION PLAN**

- The predetermined overhead rate is estimated annual overhead cost divided by estimated annual operating activity.
- Assignment of overhead to jobs is determined by multiplying the actual activity base used by the predetermined overhead rate.
- The entry to record the assignment of overhead transfers an amount out of Manufacturing Overhead into Work in Process Inventory.

### Solution

Predetermined overhead rate = $160,000 ÷ 40,000 hours = $4.00 per machine hour
Amount of overhead applied to Job No. 302 = 2,000 hours × $4.00 = $8,000

The entry to record the application of overhead to Job No. 302 on March 31 is:

| | | |
|---|---|---|
| Work in Process Inventory | 8,000 | |
| Manufacturing Overhead | | 8,000 |
| (To assign overhead to jobs) | | |

Related exercise material: **BE20.6, BE20.7, DO IT! 20.3, E20.5, and E20.6.**

# Entries for Jobs Completed and Sold

**LEARNING OBJECTIVE 4**

Prepare entries for manufacturing and service jobs completed and sold.

## Assigning Costs to Finished Goods

**When a job is completed**, Wallace Company summarizes the costs and completes the lower portion of the applicable job cost sheet. For example, if we assume that Wallace completes Job No. 101, a batch of electronic sensors, on January 31, the job cost sheet appears as shown in Illustration 20.14.

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**ILLUSTRATION 20.14**
**Completed job cost sheet**

**Job Cost Sheet**

| | | | |
|---|---|---|---|
| Job No. | 101 | Quantity | 1,000 |
| Item | Electronic Sensors | Date Requested | January 5 |
| For | Tanner Company | Date Completed | January 31 |

| Date | Direct Materials | Direct Labor | Manufacturing Overhead |
|---|---|---|---|
| 1/6 | $ 1,000 | | |
| 1/10 | | $ 9,000 | $ 7,200 |
| 1/12 | 7,000 | | |
| 1/26 | 4,000 | | |
| 1/31 | | 6,000 | 4,800 |
| | $12,000 | $15,000 | $12,000 |

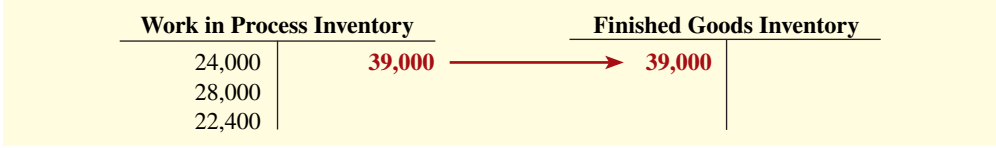
| | |
|---|---|
| Cost of completed job | |
| Direct materials | $ 12,000 |
| Direct labor | 15,000 |
| Manufacturing overhead | 12,000 |
| Total cost | $ 39,000 |
| Unit cost ($39,000 1,000) | $ 39.00 |

When a job is finished, Wallace makes an entry to transfer its total cost to finished goods inventory. The entry is as follows.

(7)

| | | | |
|---|---|---|---|
| Jan. 31 | Finished Goods Inventory | 39,000 | |
| | Work in Process Inventory | | 39,000 |
| | (To record completion of Job No. 101) | | |

This entry increases Finished Goods Inventory and reduces Work in Process Inventory by $39,000, as shown in the T-accounts below.




**Finished Goods Inventory is a control account. It controls individual finished goods records** in a finished goods subsidiary ledger.

## Assigning Costs to Cost of Goods Sold

Companies recognize cost of goods sold when each sale occurs. To illustrate the entries a company makes when it sells a completed job, assume that on January 31 Wallace Company sells on account Job No. 101. The job cost $39,000, and it sold for $50,000. The entries to record the sale and recognize cost of goods sold are:

(8)

| | | | |
|---|---|---|---|
| Jan. 31 | Accounts Receivable | 50,000 | |
| | Sales Revenue | | 50,000 |
| | (To record sale of Job No. 101) | | |
| 31 | Cost of Goods Sold | 39,000 | |
| | Finished Goods Inventory | | 39,000 |
| | (To record cost of Job No. 101) | | |

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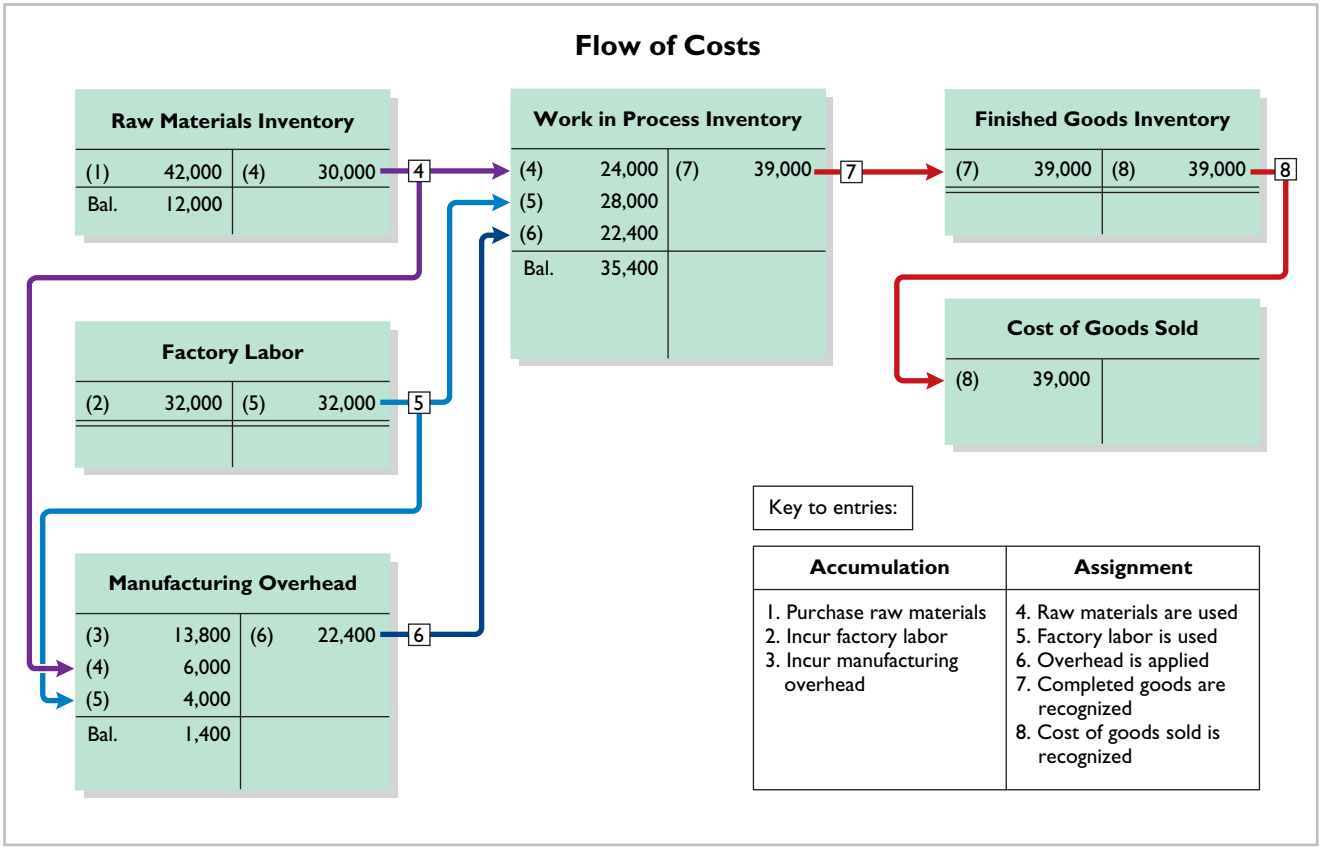
This entry increases Cost of Goods Sold and reduces Finished Goods Inventory by $39,000, as shown in the T-accounts below.

| Finished Goods Inventory | | Cost of Goods Sold | |
|---|---|---|---|
| 39,000 | **39,000** → | **39,000** | |

## Summary of Job Order Cost Flows

Illustration 20.15 shows a completed flowchart for a job order cost accounting system. All postings are keyed to entries 1–8 in the example presented in the previous pages for Wallace Company.

**ILLUSTRATION 20.15** **Flow of costs in a job order cost system**




The cost flows in the diagram can be categorized as one of four types:

- **Accumulation.** The company first accumulates costs by (1) purchasing raw materials, (2) incurring labor costs, and (3) incurring manufacturing overhead costs.
- **Assignment to jobs.** Once the company has incurred manufacturing costs, it must assign them to specific jobs. For example, as it uses raw materials on specific jobs (4), the company assigns them to work in process or treats them as manufacturing overhead if the raw materials cannot be associated with a specific job. Similarly, the company either assigns factory labor (5) to work in process or treats it as manufacturing overhead if the factory labor cannot be associated with a specific job. Finally, the company assigns manufacturing overhead (6) to work in process using a *predetermined overhead rate*. This deserves emphasis: **Do not assign overhead using actual overhead costs but instead apply overhead using a predetermined rate.**
- **Completed jobs.** As jobs are completed (7), the company transfers the cost of the completed job out of work in process inventory into finished goods inventory.
- **When goods are sold.** As specific items are sold (8), the company transfers their cost out of finished goods inventory into cost of goods sold.

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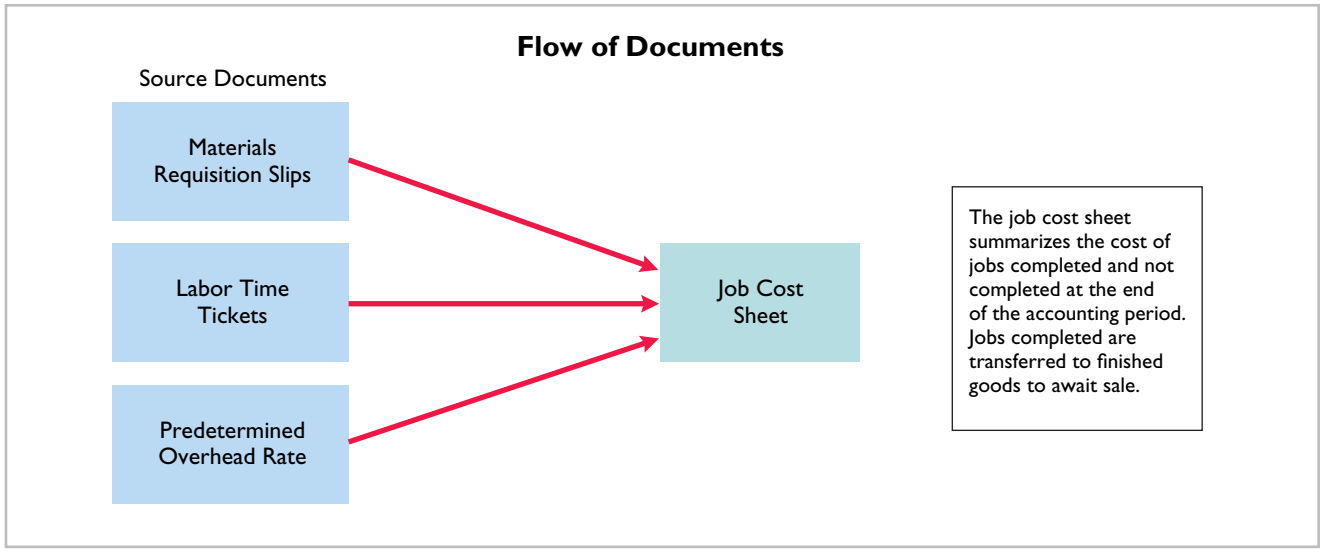
Illustration 20.16 summarizes the flow of documents in a job order cost system.

**ILLUSTRATION 20.16** **Flow of documents in a job order cost system**


Flow of Documents
Source Documents
Materials Requisition Slips
Labor Time Tickets
Predetermined Overhead Rate
Job Cost Sheet
The job cost sheet summarizes the cost of jobs completed and not completed at the end of the accounting period. Jobs completed are transferred to finished goods to await sale.

## Job Order Costing for Service Companies

Our extended job order costing example focuses on a manufacturer so that you see the flow of costs through the inventory accounts. It is important to understand, however, that job order costing is also commonly used by service companies. While service companies do not have inventory, the techniques of job order costing are still quite useful in many service-industry environments. Consider, for example, the **Mayo Clinic** (healthcare), **Pricewaterhouse Coopers** (accounting), and **Goldman Sachs** (investment banking). These companies need to keep track of the cost of jobs performed for specific customers to evaluate the profitability of medical treatments, audits, or investment banking engagements.

Many service organizations bill their customers using cost-plus contracts. Cost-plus contracts mean that the customer's bill is the sum of the costs incurred on the job, plus a profit amount that is calculated as a percentage of the costs incurred. In order to minimize conflict with customers and reduce potential contract disputes, service companies that use cost-plus contracts must maintain accurate and up-to-date costing records. Up-to-date cost records enable a service company to immediately notify a customer of cost overruns due to customer requests for changes to the original plan or unexpected complications. Timely recordkeeping allows the contractor and customer to consider alternatives before it is too late.

A service company that uses a job order cost system does not have inventory accounts. It does, however, use an account similar to Work in Process Inventory, referred to here as Service Contracts in Process, to record job costs prior to completion. To illustrate the journal entries for a service company under a job order cost system, consider the following transactions for Dorm Decor, an interior design company. The entry to record the assignment of $9,000 of supplies to projects ($7,000 direct and $2,000 indirect) is:

| | | |
|---|---|---|
| Service Contracts in Process | 7,000 | |
| Operating Overhead | 2,000 | |
| Supplies | | 9,000 |
| (To assign supplies to projects) | | |

The entry to record the assignment of service salaries and wages of $100,000 ($84,000 direct and $16,000 indirect) is:

| | | |
|---|---|---|
| Service Contracts in Process | 84,000 | |
| Operating Overhead | 16,000 | |
| Service Salaries and Wages | | 100,000 |
| (To assign personnel costs to projects) | | |

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Dorm Decor applies operating overhead at a rate of 50% of direct labor costs. The entry to record the application of overhead ($84,000 × 50%) based on the $84,000 of direct labor costs is:

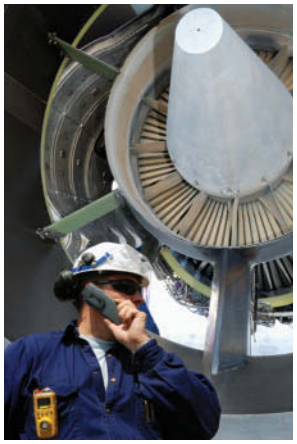
| | | |
|---|---|---|
| Service Contracts in Process | 42,000 | |
| Operating Overhead | | 42,000 |
| (To assign operating overhead to projects) | | |

Upon completion of a design project (for State University) the job cost sheet shows a total cost of $34,000. The entry to record completion of this project is:

| | | |
|---|---|---|
| Cost of Completed Service Contracts | 34,000 | |
| Service Contracts in Process | | 34,000 |
| (To record completion of State University project) | | |

Job cost sheets for a service company keep track of materials, labor, and overhead used on a particular job similar to a manufacturer. Several exercises at the end of this chapter apply job order costing to service companies.

## Service Company Insight — General Electric



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### Sales Are Nice, but Service Revenue Pays the Bills

Jet engines are one of the many products made by the industrial operations division of **General Electric (GE)**. At prices as high as $30 million per engine, you can bet that GE does its best to keep track of costs. It might surprise you that GE doesn't make much profit on the sale of each engine. So why does it bother making them? For the service revenue. During one recent year, about 75% of the division's revenues came from servicing its own products. One estimate is that the $13 billion in aircraft engines sold during a recent three-year period will generate about $90 billion in service revenue over the 30-year life of the engines. It hopes to have 44,000 engines in service by 2020.

Because of the high product costs, both the engines themselves and the subsequent service are most likely accounted for using job order costing. Accurate service cost records are important because GE needs to generate high profit margins (estimated to be 30%) on its service jobs to make up for the low margins on the original sale. It also needs good cost records for its service jobs in order to control its costs. Otherwise, a competitor, such as **Pratt and Whitney**, might submit lower bids for service contracts and take lucrative service jobs away from GE.

**Sources:** Paul Glader, "GE's Focus on Services Faces Test," *Wall Street Journal Online* (March 3, 2009); and Steve Heller, "General Electric's Untapped Opportunity in Aviation," *The Motley Fool* (August 27, 2016).

**Explain why GE would use job order costing to keep track of the cost of repairing a malfunctioning engine for a major airline. (Go to WileyPLUS for this answer and additional questions.)**

# Advantages and Disadvantages of Job Order Costing

Job order costing is more precise in the assignment of costs to projects than process costing. For example, assume that a construction company, Juan Company, builds 10 custom homes a year at a total cost of $2,000,000. One way to determine the cost of the homes is to divide the total construction cost incurred during the year by the number of homes produced during the year. For Juan Company, an average cost of $200,000 ($2,000,000 ÷ 10) is computed. If the homes are nearly identical, then this approach is adequate for purposes of determining profit per home. But if the homes vary in terms of size, style, and material types, using the average cost of $200,000 to determine profit per home is inappropriate. Instead, Juan Company should use a job order cost system to determine the specific cost incurred to build each home and the amount of profit made on each. Thus, job order costing provides more useful information for determining the profitability of particular projects and for estimating costs when preparing bids on future jobs.

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However, job order costing requires a significant amount of data entry. For Juan Company, it is much easier to simply keep track of total costs incurred during the year than it is to keep track of the costs incurred on each job (home built). Recording this information is time-consuming, and if the data is not entered accurately, then the product costs are incorrect. In recent years, technological advances, such as bar-coding devices for both labor costs and materials, have increased the accuracy and reduced the effort needed to record costs on specific jobs. These innovations expand the opportunities to apply job order costing in a wider variety of business settings, thus improving management's ability to control costs and make better informed decisions.

A common problem of all costing systems is how to assign overhead to the finished product. Overhead often represents more than 50% of a product's cost, and this cost is often difficult to assign meaningfully to the product. How, for example, is the salary of a project manager at Juan Company assigned to the various homes, which may differ in size, style, and cost of materials used? The accuracy of the job order cost system is largely dependent on the accuracy of the overhead allocation process. Even if the company does a good job of keeping track of the specific amounts of materials and labor used on each job, if the overhead costs are not assigned to individual jobs in a meaningful way, the product costing information is not useful.

### DO IT! 4 | Completion and Sale of Jobs

During the current month, Onyx Corporation completed Job 109 and Job 112. Job 109 cost $19,000 and Job 112 cost $27,000. Job 112 was sold on account for $42,000. Journalize the entries for the completion of the two jobs and the sale of Job 112.

**ACTION PLAN**

- Debit Finished Goods Inventory for the cost of completed jobs.
- Debit Cost of Goods Sold for the cost of jobs sold.

**Solution**

| | | |
|---|---|---|
| Finished Goods Inventory | 46,000 | |
| Work in Process Inventory | | 46,000 |
| (To record completion of Job 109, costing $19,000 and Job 112, costing $27,000) | | |
| Accounts Receivable | 42,000 | |
| Sales Revenue | | 42,000 |
| (To record sale of Job 112) | | |
| Cost of Goods Sold | 27,000 | |
| Finished Goods Inventory | | 27,000 |
| (To record cost of goods sold for Job 112) | | |

Related exercise material: **BE20.8, BE20.9, DO IT! 20.4, E20.2, E20.3, E20.6, E20.7, and E20.10.**

## Applied Manufacturing Overhead

**LEARNING OBJECTIVE 5**

Distinguish between under- and overapplied manufacturing overhead.

At the end of a period, companies prepare financial statements that present aggregate data on all jobs manufactured and sold. The cost of goods manufactured schedule in job order costing is the same as in Chapter 19 with one exception: **The schedule shows manufacturing overhead applied, rather than actual overhead costs. The company adds this amount to direct materials and direct labor to determine total manufacturing costs.**

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Companies prepare the cost of goods manufactured schedule directly from the Work in Process Inventory account (see **Helpful Hint**). **Illustration 20.17** shows a condensed schedule for Wallace Company for January.

**Wallace Company**
**Cost of Goods Manufactured Schedule**
**For the Month Ending January 31, 2020**

| | | |
|---|---|---|
| Work in process, January 1 | | $ –0– |
| Direct materials used | $24,000 | |
| Direct labor | 28,000 | |
| Manufacturing overhead applied | 22,400 | |
| Total manufacturing costs | | 74,400 |
| Total cost of work in process | | $74,400 |
| Less: Work in process, January 31 | | 35,400 |
| Cost of goods manufactured | | $39,000 |

**ILLUSTRATION 20.17**
**Cost of goods manufactured schedule**

**HELPFUL HINT**
Companies usually prepare monthly financial statements for management use only.

Note that the cost of goods manufactured ($39,000) agrees with the amount transferred from Work in Process Inventory to Finished Goods Inventory in journal entry No. 7 in Illustration 20.15.

## Under- or Overapplied Manufacturing Overhead

Recall that overhead is applied based on an estimate of total annual overhead costs. This estimate will rarely be exactly equal to actual overhead incurred. Therefore, at the end of the year, after overhead has been applied to specific jobs, the Manufacturing Overhead account will likely have a remaining balance.

When Manufacturing Overhead has a **debit balance**, overhead is said to be underapplied. **Underapplied overhead** means that the overhead applied to work in process is less than the overhead incurred. Conversely, when manufacturing overhead has a **credit balance**, overhead is overapplied. **Overapplied overhead** means that the overhead applied to work in process is greater than the overhead incurred. **Illustration 20.18** shows these concepts.

**ILLUSTRATION 20.18** **Under- and overapplied overhead**

**Manufacturing Overhead**

| Actual (Costs incurred) | Applied (Costs assigned) |
|---|---|

If applied is **less** than actual, manufacturing overhead is underapplied.

If applied is **greater** than actual, manufacturing overhead is overapplied.

### Year-End Balance

At the end of the year, all manufacturing overhead transactions are complete. There is no further opportunity for offsetting events to occur. At this point, Wallace Company eliminates any balance in Manufacturing Overhead by an adjusting entry. It considers under- or overapplied overhead to be an **adjustment to cost of goods sold.** Thus, Wallace **debits underapplied overhead to Cost of Goods Sold**. **It credits overapplied overhead to Cost of Goods Sold.**

To illustrate, as noted earlier in the chapter and shown below, after overhead of $22,400, Wallace has a $1,400 debit balance in Manufacturing Overhead at December 31. This occurred because the amount of overhead applied was less than the amount incurred during the period.

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| Manufacturing Overhead | |
|---|---|
| 13,800 | 22,400 ← Applied |
| Incurred → 6,000 | |
| 4,000 | |
| 1,400 | |

The adjusting entry for the underapplied overhead is:

| | | | |
|---|---|---|---|
| Dec. 31 | Cost of Goods Sold | 1,400 | |
| | Manufacturing Overhead | | 1,400 |
| | (To transfer underapplied overhead to cost of goods sold) | | |

After Wallace posts this entry, Manufacturing Overhead has a zero balance. In preparing an income statement for the year, Wallace reports cost of goods sold **after adjusting it** for either under- or overapplied overhead.

Illustration 20.19 presents an income statement for Wallace after adjusting for the $1,400 of underapplied overhead.

**ILLUSTRATION 20.19**
**Partial income statement**

**Wallace Company**
**Income Statement (partial)**
**For the Month Ending January 31, 2020**

| | | |
|---|---|---|
| Sales revenue | | $50,000 |
| Cost of goods sold | | |
| Finished goods inventory, January 1 | $ –0– | |
| Cost of goods manufactured (see Illustration 20.17) | 39,000 | |
| Cost of goods available for sale | 39,000 | |
| Less: Finished goods inventory, January 31 | –0– | |
| Cost of goods sold—unadjusted | 39,000 | |
| Add: Adjustment for underapplied overhead | 1,400 | |
| Cost of goods sold—adjusted | | 40,400 |
| Gross profit | | $ 9,600 |

For more accurate costing, significant under- or overapplied overhead at the end of the year should be allocated among ending work in process, finished goods, and cost of goods sold. The discussion of this allocation approach is left to more advanced courses.

## DO IT! 5 | Applied Manufacturing Overhead

For Karr Company, the predetermined overhead rate is 140% of direct labor cost. During the month, Karr incurred $90,000 of factory labor costs, of which $80,000 is direct labor and $10,000 is indirect labor. Actual overhead incurred (including indirect labor) was $119,000.

Compute the amount of manufacturing overhead applied during the month. Determine the amount of under- or overapplied manufacturing overhead.

**ACTION PLAN**

- Calculate the amount of overhead applied by multiplying the predetermined overhead rate by actual activity.
- If applied overhead is less than actual, overhead is underapplied.
- If applied overhead is greater than actual, overhead is overapplied.

**Solution**

Manufacturing overhead applied = (140% × $80,000) = $112,000
Underapplied manufacturing overhead = ($119,000 − $112,000) = $7,000

Related exercise material: **BE20.10, DO IT! 20.5, E20.4, E20.5, E20.9, and E20.13.**

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# Review and Practice

## Learning Objectives Review

**1 Describe cost systems and the flow of costs in a job order system.**

Cost accounting involves the procedures for measuring, recording, and reporting product costs. From the data accumulated, companies determine the total cost and the unit cost of each product. The two basic types of cost accounting systems are process cost and job order cost.

In job order costing, companies first accumulate manufacturing costs in three accounts: Raw Materials Inventory, Factory Labor, and Manufacturing Overhead. They then assign the accumulated costs to Work in Process Inventory and eventually to Finished Goods Inventory and Cost of Goods Sold.

**2 Use a job cost sheet to assign costs to work in process.**

A job cost sheet is a form used to record the costs chargeable to a specific job and to determine the total and unit costs of the completed job. Job cost sheets constitute the subsidiary ledger for the Work in Process Inventory control account.

**3 Demonstrate how to determine and use the predetermined overhead rate.**

The predetermined overhead rate is based on the relationship between estimated annual overhead costs and estimated annual operating activity. This is expressed in terms of a common activity base, such as direct labor cost. Companies use this rate to assign overhead costs to work in process and to specific jobs.

**4 Prepare entries for manufacturing and service jobs completed and sold.**

When jobs are completed, companies debit the cost to Finished Goods Inventory and credit it to Work in Process Inventory. When a job is sold, the entries are (a) debit Cash or Accounts Receivable and credit Sales Revenue for the selling price, and (b) debit Cost of Goods Sold and credit Finished Goods Inventory for the cost of the goods.

**5 Distinguish between under- and overapplied manufacturing overhead.**

Underapplied manufacturing overhead indicates that the overhead assigned to work in process is less than the overhead incurred. Overapplied overhead indicates that the overhead assigned to work in process is greater than the overhead incurred.

## Glossary Review

**Cost accounting** An area of accounting that involves measuring, recording, and reporting product and service costs. (p. 20-3).

**Cost accounting system** Manufacturing and service cost accounts that are fully integrated into the general ledger of a company. (p. 20-3).

**Job cost sheet** A form used to record the costs chargeable to a specific job and to determine the total and unit costs of the completed job. (p. 20-7).

**Job order cost system** A cost accounting system in which costs are assigned to each job or batch. (p. 20-3).

**Materials requisition slip** A document authorizing the issuance of raw materials from the storeroom to production. (p. 20-8).

**Overapplied overhead** A situation in which overhead applied to work in process is greater than the overhead incurred. (p. 20-21).

**Predetermined overhead rate** A rate based on the relationship between estimated annual overhead costs and estimated annual operating activity, expressed in terms of a common activity base. (p. 20-12).

**Process cost system** A cost accounting system used when a company manufactures a large volume of similar products. (p. 20-3).

**Time ticket** A document that indicates the employee, the hours worked, the account and job to be charged, and the total labor cost. (p. 20-10).

**Underapplied overhead** A situation in which overhead applied to work in process is less than the overhead incurred. (p. 20-21).

## Practice Multiple-Choice Questions

1. **(LO 1)** Cost accounting involves the measuring, recording, and reporting of:
   - **a.** product and service costs.
   - **b.** future costs.
   - **c.** manufacturing processes.
   - **d.** managerial accounting decisions.

2. **(LO 1)** A company is more likely to use a job order cost system if:
   - **a.** it manufactures a large volume of similar products.

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**b.** its production is continuous.

**c.** it manufactures products with unique characteristics.

**d.** it uses a periodic inventory system.

**3.** **(LO 1)** In accumulating raw materials costs, companies debit the cost of raw materials purchased in a perpetual system to:

**a.** Raw Materials Purchases.

**b.** Raw Materials Inventory.

**c.** Purchases.

**d.** Work in Process.

**4.** **(LO 1)** When incurred, factory labor costs are debited to:

**a.** Work in Process.

**b.** Factory Wages Expense.

**c.** Factory Labor.

**d.** Factory Wages Payable.

**5.** **(LO 1)** The flow of costs in job order costing:

**a.** begins with work in process inventory and ends with finished goods inventory.

**b.** begins as soon as a sale occurs.

**c.** parallels the physical flow of materials as they are converted into finished goods and then sold.

**d.** is necessary to prepare the cost of goods manufactured schedule.

**6.** **(LO 2)** Raw materials are assigned to a job when:

**a.** the job is sold.

**b.** the materials are purchased.

**c.** the materials are received from the vendor.

**d.** the materials are issued by the materials storeroom.

**7.** **(LO 2)** The source of information for assigning costs to job cost sheets are:

**a.** invoices, time tickets, and the predetermined overhead rate.

**b.** materials requisition slips, time tickets, and the actual overhead costs.

**c.** materials requisition slips, payroll register, and the predetermined overhead rate.

**d.** materials requisition slips, time tickets, and the predetermined overhead rate.

**8.** **(LO 2)** In recording the issuance of raw materials in a job order cost system, it would be **incorrect** to:

**a.** debit Work in Process Inventory.

**b.** debit Finished Goods Inventory.

**c.** debit Manufacturing Overhead.

**d.** credit Raw Materials Inventory.

**9.** **(LO 2)** The entry when direct factory labor is assigned to jobs is a debit to:

**a.** Work in Process Inventory and a credit to Factory Labor.

**b.** Manufacturing Overhead and a credit to Factory Labor.

**c.** Factory Labor and a credit to Manufacturing Overhead.

**d.** Factory Labor and a credit to Work in Process Inventory.

**10.** **(LO 3)** The formula for computing the predetermined manufacturing overhead rate is estimated annual overhead costs divided by estimated annual operating activity, expressed as:

**a.** direct labor cost.

**b.** direct labor hours.

**c.** machine hours.

**d.** Any of the above.

**11.** **(LO 3)** In Crawford Company, the predetermined overhead rate is 80% of direct labor cost. During the month, Crawford incurs $210,000 of factory labor costs, of which $180,000 is direct labor and $30,000 is indirect labor. Actual overhead incurred was $200,000. The amount of overhead debited to Work in Process Inventory should be:

**a.** $200,000.

**b.** $144,000.

**c.** $168,000.

**d.** $160,000.

**12.** **(LO 4)** Mynex Company completes Job No. 26 at a cost of $4,500 and later sells it for $7,000 cash. A **correct** entry is:

**a.** debit Finished Goods Inventory $7,000 and credit Work in Process Inventory $7,000.

**b.** debit Cost of Goods Sold $7,000 and credit Finished Goods Inventory $7,000.

**c.** debit Finished Goods Inventory $4,500 and credit Work in Process Inventory $4,500.

**d.** debit Accounts Receivable $7,000 and credit Sales Revenue $7,000.

**13.** **(LO 5)** At the end of an accounting period, a company using a job order cost system calculates the cost of goods manufactured:

**a.** from the job cost sheet.

**b.** from the Work in Process Inventory account.

**c.** by adding direct materials used, direct labor incurred, and manufacturing overhead incurred.

**d.** from the Cost of Goods Sold account.

**14.** **(LO 4)** Which of the following statements is **true**?

**a.** Job order costing requires less data entry than process costing.

**b.** Allocation of overhead is easier under job order costing than process costing.

**c.** Job order costing provides more precise costing for custom jobs than process costing.

**d.** The use of job order costing has declined because more companies have adopted automated accounting systems.

**15.** **(LO 5)** At end of the year, a company has a $1,200 debit balance in Manufacturing Overhead. The company:

**a.** makes an adjusting entry by debiting Manufacturing Overhead Applied for $1,200 and crediting Manufacturing Overhead for $1,200.

**b.** makes an adjusting entry by debiting Manufacturing Overhead Expense for $1,200 and crediting Manufacturing Overhead for $1,200.

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**c.** makes an adjusting entry by debiting Cost of Goods Sold for $1,200 and crediting Manufacturing Overhead for $1,200.

**d.** makes no adjusting entry because differences between actual overhead and the amount applied are a normal part of job order costing and will average out over the next year.

**16.** **(LO 5)** Manufacturing overhead is underapplied if:

**a.** actual overhead is less than applied.

**b.** actual overhead is greater than applied.

**c.** the predetermined rate equals the actual rate.

**d.** actual overhead equals applied overhead.

## Solutions

**1.** **a.** Cost accounting involves the measuring, recording, and reporting of product and service costs, not (b) future costs, (c) manufacturing processes, or (d) managerial accounting decisions.

**2.** **c.** A job costing system is more likely for products with unique characteristics. The other choices are incorrect because a process cost system is more likely for (a) large volumes of similar products or (b) if production is continuous. (d) is incorrect because the choice of a costing system is not dependent on whether a periodic or perpetual inventory system is used.

**3.** **b.** In a perpetual system, purchases of raw materials are debited to Raw Materials Inventory, not (a) Raw Materials Purchases, (c) Purchases, or (d) Work in Process.

**4.** **c.** When factory labor costs are incurred, they are debited to Factory Labor, not (a) Work in Process, (b) Factory Wages Expense, or (d) Factory Wages Payable (they are debited to Factory Labor and credited to Factory Wages Payable).

**5.** **c.** Job order costing parallels the physical flow of materials as they are converted into finished goods. The other choices are incorrect because job order costing begins (a) with raw materials, not work in process, and ends with cost of goods sold; and (b) as soon as raw materials are purchased, not when the sale occurs. (d) is incorrect because the cost of goods manufactured schedule is prepared from the Work in Process account and is only a portion of the costs in a job order system.

**6.** **d.** Raw materials are assigned to a job when the materials are issued by the materials storeroom, not when (a) the job is sold, (b) the materials are purchased, or (c) the materials are received from the vendor.

**7.** **d.** Materials requisition slips are used to assign direct materials, time tickets are used to assign direct labor, and the predetermined overhead rate is used to assign manufacturing overhead to job cost sheets. The other choices are incorrect because (a) materials requisition slips, not invoices, are used to assign direct materials; (b) the predetermined overhead rate, not the actual overhead costs, is used to assign manufacturing overhead; and (c) time tickets, not the payroll register, are used to assign direct labor.

**8.** **b.** Finished Goods Inventory is debited when goods are transferred from work in process to finished goods, not when raw materials are issued for a job. Choices (a), (c), and (d) are true statements.

**9.** **a.** When direct factory labor is assigned to jobs, the entry is a debit to Work in Process Inventory and a credit to Factory Labor. The other choices are incorrect because (b) Work in Process Inventory, not Manufacturing Overhead, is debited; (c) Work in Process Inventory, not Factory Labor, is debited and Factory Labor, not Manufacturing Overhead, is credited; and (d) Work in Process Inventory, not Factory Labor, is debited and Factory Labor, not Work in Process Inventory, is credited.

**10.** **d.** Any of the activity measures mentioned can be used in computing the predetermined manufacturing overhead rate. Choices (a) direct labor cost, (b) direct labor hours, and (c) machine hours can all be used in computing the predetermined manufacturing overhead rate, but (d) is the best answer.

**11.** **b.** Work in Process Inventory should be debited for $144,000 ($180,000 × 80%), the amount of manufacturing overhead applied, not (a) $200,000, (c) $168,000, or (d) $160,000.

**12.** **c.** When a job costing $4,500 is completed, Finished Goods Inventory is debited and Work in Process Inventory is credited for $4,500. Choices (a) and (b) are incorrect because the amounts should be for the cost of the job ($4,500), not the sale amount ($7,000). Choice (d) is incorrect because the debit should be to Cash, not Accounts Receivable.

**13.** **b.** At the end of an accounting period, a company using a job costing system prepares the cost of goods manufactured from the Work in Process Inventory account, not (a) the job cost sheet; (c) by adding direct materials used, direct labor incurred, and manufacturing overhead incurred; or (d) from the Cost of Goods Sold Account.

**14.** **c.** Job order costing provides more precise costing for custom jobs than process costing. The other choices are incorrect because (a) job order costing often requires significant data entry, (b) overhead allocation is a problem for all costing systems, and (d) the use of job order costing has increased due to automated accounting systems.

**15.** **c.** The company would make an adjusting entry for the underapplied overhead by debiting Cost of Goods Sold for $1,200 and crediting Manufacturing Overhead for $1,200, not by debiting (a) Manufacturing Overhead Applied for $1,200 or (b) Manufacturing Overhead Expense for $1,200. Choice (d) is incorrect because at the end of the year, a company makes an entry to eliminate any balance in Manufacturing Overhead.

**16.** **b.** Manufacturing overhead is underapplied if actual overhead is greater than applied overhead. The other choices are incorrect because (a) if actual overhead is less than applied, then manufacturing overhead is overapplied; (c) if the predetermined rate equals the actual rate, the actual overhead costs incurred equal the overhead costs applied, neither over- nor underapplied; and (d) if the actual overhead equals the applied overhead, neither over- nor underapplied occurs.

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## Practice Brief Exercises

*Prepare entries to record factory labor.*

**1. (LO 2)** During January, its first month of operations, Swarzak Company had factory labor of $9,000, of which $7,500 relates to factory wages payable and $1,500 relates to payroll taxes payable. Time tickets show that the factory labor of $9,000 was used as follows: Job 1 $3,200, Job 2 $2,600, Job 3 $2,200, and general factory use $1,000. Prepare summary journal entries to record factory labor.

### Solution

**1.**

| | | | | |
|---|---|---|---|---|
| Jan. 31 | Factory Labor | | 9,000 | |
| | Factory Wages Payable | | | 7,500 |
| | Employer Payroll Taxes Payable | | | 1,500 |
| Jan. 31 | Work in Process Inventory | | 8,000 | |
| | Manufacturing Overhead | | 1,000 | |
| | Factory Labor | | | 9,000 |

*Assign manufacturing overhead to production.*

**2. (LO 3)** Brock Company estimates that annual manufacturing overhead costs will be $950,000. Annual direct labor cost is the base used to apply overhead, and it is estimated to be $500,000. During January, Brock incurred direct labor costs of $40,000. Prepare the entry to assign overhead to production.

### Solution

**2.** Overhead rate based on direct labor cost = ($950,000 ÷ $500,000) = 190%.

| | | | | |
|---|---|---|---|---|
| Jan. 31 | Work in Process Inventory | | 76,000 | |
| | Manufacturing Overhead ($40,000 × 190%) | | | 76,000 |

*Prepare entries for completion and sale of jobs.*

**3. (LO 4)** In May, Huntzinger Company completes Jobs 14, 15, and 16. Job 14 cost $40,000, Job 15 $70,000, and Job 16 $35,000. On May 31, Job 14 is sold to a customer on account for $72,000. Journalize the entries for the completion of the three jobs and the sale of Job 14.

### Solution

**3.**

| | | | | |
|---|---|---|---|---|
| May 31 | Finished Goods Inventory | | 145,000 | |
| | Work in Process Inventory | | | 145,000 |
| 31 | Accounts Receivable | | 72,000 | |
| | Sales Revenue | | | 72,000 |
| 31 | Cost of Goods Sold | | 40,000 | |
| | Finished Goods Inventory | | | 40,000 |

*Prepare adjusting entries for under- and overapplied overhead.*

**4. (LO 5)** At December 31, balances in Manufacturing Overhead are Alex Company—debit $2,200, Katz Company—credit $1,900. Prepare the adjusting entry for each company at December 31, assuming the adjustment is made to cost of goods sold.

### Solution

**4.**

**Alex Company**

| | | | | |
|---|---|---|---|---|
| Dec. 31 | Cost of Goods Sold | | 2,200 | |
| | Manufacturing Overhead | | | 2,200 |

**Katz Company**

| | | | | |
|---|---|---|---|---|
| Dec. 31 | Manufacturing Overhead | | 1,900 | |
| | Cost of Goods Sold | | | 1,900 |

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## Practice Exercises

**1. (LO 1, 2, 3, 4)** A job order cost sheet for Michaels Company is shown below.

*Analyze a job cost sheet and prepare entries for manufacturing costs.*

| **Job No. 92** | | | **For 2,000 Units** |
|---|---|---|---|
| Date | Direct Materials | Direct Labor | Manufacturing Overhead |
| Beg. bal. Jan. 1 | 3,925 | 6,000 | 4,200 |
| 8 | 6,000 | | |
| 12 | | 8,500 | 6,375 |
| 25 | 2,000 | | |
| 27 | | 4,000 | 3,000 |
| | 11,925 | 18,500 | 13,575 |

| | |
|---|---|
| Cost of completed job: | |
| Direct materials | $11,925 |
| Direct labor | 18,500 |
| Manufacturing overhead | 13,575 |
| Total cost | $44,000 |
| Unit cost ($44,000 ÷ 2,000) | $ 22.00 |

### Instructions

**a.** Answer the following questions.

**1.** What was the balance in Work in Process Inventory on January 1 if this was the only unfinished job?

**2.** If manufacturing overhead is applied on the basis of direct labor cost, what over-head rate was used in each year?

**b.** Prepare summary entries at January 31 to record the current year's transactions pertaining to Job No. 92.

### Solution

**1. a. 1.** $14,125, or ($3,925 + $6,000 + $4,200).

**2.** Last year 70%, or ($4,200 ÷ $6,000); this year 75% (either $6,375 ÷ $8,500 or $3,000 ÷ $4,000).

**b.**

| | | | | |
|---|---|---|---|---|
| Jan. 31 | Work in Process Inventory | | 8,000 | |
| | Raw Materials Inventory | | | 8,000 |
| | ($6,000 + $2,000) | | | |
| 31 | Work in Process Inventory | | 12,500 | |
| | Factory Labor | | | 12,500 |
| | ($8,500 + $4,000) | | | |
| 31 | Work in Process Inventory | | 9,375 | |
| | Manufacturing Overhead | | | 9,375 |
| | ($6,375 + $3,000) | | | |
| 31 | Finished Goods Inventory | | 44,000 | |
| | Work in Process Inventory | | | 44,000 |

**2. (LO 3, 5)** Kwik Kopy Company applies operating overhead to photocopying jobs on the basis of machine hours used. Overhead costs are estimated to total $290,000 for the year, and machine usage is estimated at 125,000 hours.

For the year, $295,000 of overhead costs are incurred and 130,000 hours are used.

*Compute the overhead rate and under- or overapplied overhead.*

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**Instructions**

**a.** Compute the service overhead rate for the year.

**b.** What is the amount of under- or overapplied overhead at December 31?

**c.** Assuming the under- or overapplied overhead for the year is not allocated to inventory accounts, prepare the adjusting entry to assign the amount to cost of jobs finished.

**Solution**

**2. a.** $2.32 per machine hour ($290,000 ÷ 125,000).

**b.** ($295,000) − ($2.32 × 130,000 machine hours)
$295,000 − $301,600 = $6,600 overapplied

**c.**

| | | | |
|---|---|---|---|
| | Operating Overhead | 6,600 | |
| | Cost of Goods Sold | | 6,600 |

## Practice Problem

*Compute predetermined overhead rate, apply overhead, and calculate under- or overapplied overhead.*

**(LO 3, 5)** Cardella Company applies overhead on the basis of direct labor costs. The company estimates annual overhead costs will be $760,000 and annual direct labor costs will be $950,000. During February, Cardella works on two jobs: A16 and B17. Summary data concerning these jobs are as follows.

**Manufacturing Costs Incurred**

Purchased $54,000 of raw materials on account.

Factory labor $76,000, plus $4,000 employer payroll taxes.

Manufacturing overhead incurred exclusive of indirect materials and indirect labor $59,800.

**Assignment of Costs**

| | |
|---|---|
| Direct materials: | Job A16 $27,000, Job B17 $21,000 |
| Indirect materials: | $3,000 |
| Direct labor: | Job A16 $52,000, Job B17 $26,000 |
| Indirect labor: | $2,000 |

By the end of February, the company completed Job A16 and sold it on account for $150,000. Job B17 was only partially completed.

**Instructions**

**a.** Compute the predetermined overhead rate.

**b.** Journalize the February transactions in the sequence followed in the chapter.

**c.** What was the amount of under- or overapplied manufacturing overhead?

**Solution**

**a.**

| Estimated annual overhead costs | ÷ | Estimated annual operating activity | = | Predetermined overhead rate |
|---|---|---|---|---|
| $760,000 | ÷ | $950,000 | = | 80% |

**b.**

**(1)**

| | | | |
|---|---|---|---|
| Feb. 28 | Raw Materials Inventory | 54,000 | |
| | Accounts Payable | | 54,000 |
| | (Purchase of raw materials on account) | | |

**(2)**

| | | | |
|---|---|---|---|
| 28 | Factory Labor | 80,000 | |
| | Factory Wages Payable | | 76,000 |
| | Employer Payroll Taxes Payable | | 4,000 |
| | (To record factory labor costs) | | |

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| | | | | |
|---|---|---|---|---|
| | **(3)** | | | |
| 28 | Manufacturing Overhead | | 59,800 | |
| | Accounts Payable, Accumulated Depreciation, and Prepaid Insurance | | | 59,800 |
| | (To record overhead costs) | | | |
| | **(4)** | | | |
| 28 | Work in Process Inventory | | 48,000 | |
| | Manufacturing Overhead | | 3,000 | |
| | Raw Materials Inventory | | | 51,000 |
| | (To assign raw materials to production) | | | |
| | **(5)** | | | |
| 28 | Work in Process Inventory | | 78,000 | |
| | Manufacturing Overhead | | 2,000 | |
| | Factory Labor | | | 80,000 |
| | (To assign factory labor to production) | | | |
| | **(6)** | | | |
| 28 | Work in Process Inventory | | 62,400 | |
| | Manufacturing Overhead | | | 62,400 |
| | (To assign overhead to jobs—80% × $78,000) | | | |
| | **(7)** | | | |
| 28 | Finished Goods Inventory | | 120,600 | |
| | Work in Process Inventory | | | 120,600 |
| | (To record completion of Job A16: direct materials $27,000, direct labor $52,000, and manufacturing overhead $41,600) | | | |
| | **(8)** | | | |
| 28 | Accounts Receivable | | 150,000 | |
| | Sales Revenue | | | 150,000 |
| | (To record sale of Job A16) | | | |
| 28 | Cost of Goods Sold | | 120,600 | |
| | Finished Goods Inventory | | | 120,600 |
| | (To record cost of sale for Job A16) | | | |

**c.** Manufacturing Overhead has a debit balance of $2,400 as shown below.

| Manufacturing Overhead | | | |
|---|---|---|---|
| (3) | 59,800 | (6) | 62,400 |
| (4) | 3,000 | | |
| (5) | 2,000 | | |
| Bal. | 2,400 | | |

Thus, manufacturing overhead is underapplied for the month.

## WileyPLUS

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## Questions

1. **a.** Mary Barett is not sure about the difference between cost accounting and a cost accounting system. Explain the difference to Mary.

   **b.** What is an important feature of a cost accounting system?

2. **a.** Distinguish between the two types of cost accounting systems.

   **b.** Can a company use both types of cost accounting systems?

3. What type of industry is likely to use a job order cost system? Give some examples.

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4. What type of industry is likely to use a process cost system? Give some examples.

5. Your roommate asks your help in understanding the major steps in the flow of costs in a job order cost system. Identify the steps for your roommate.

6. There are three inventory control accounts in a job order system. Identify the control accounts and their subsidiary ledgers.

7. What source documents are used in accumulating direct labor costs?

8. "Entries to Manufacturing Overhead normally are only made daily." Do you agree? Explain.

9. Stan Kaiser is confused about the source documents used in assigning materials and labor costs. Identify the documents and give the entry for each document.

10. What is the purpose of a job cost sheet?

11. Indicate the source documents that are used in charging costs to specific jobs.

12. Explain the purpose and use of a "materials requisition slip" as used in a job order cost system.

13. Sam Bowden believes actual manufacturing overhead should be charged to jobs. Do you agree? Why or why not?

14. What elements are involved in computing a predetermined overhead rate?

15. How can the agreement of Work in Process Inventory and job cost sheets be verified?

16. Jane Neff believes that the cost of goods manufactured schedule in job order cost accounting is the same as shown in Chapter 19. Is Jane correct? Explain.

17. Matt Litkee is confused about under- and overapplied manufacturing overhead. Define the terms for Matt, and indicate the balance in the manufacturing overhead account applicable to each term.

18. "At the end of the year, under- or overapplied overhead is closed to Income Summary." Is this correct? If not, indicate the customary treatment of this amount.

## Brief Exercises

*Prepare a flowchart of a job order cost accounting system and identify transactions.*

**BE20.1 (LO 1)** Dieker Company begins operations on January 1. Because all work is done to customer specifications, the company decides to use a job order cost system. Prepare a flowchart of a typical job order system with arrows showing the flow of costs. Identify the eight transactions.

*Prepare entries in accumulating manufacturing costs.*

**BE20.2 (LO 1)** During January, its first month of operations, Dieker Company accumulated the following manufacturing costs: raw materials purchased $4,000 on account, factory labor incurred $6,000 of which $5,200 relates to factory wages payable and $800 relates to payroll taxes payable, and factory utilities payable $2,000. Prepare separate journal entries for each type of manufacturing cost.

*Prepare entry for the assignment of raw materials costs.*

**BE20.3 (LO 2)** In January, Dieker Company requisitions raw materials for production as follows: Job 1 $900, Job 2 $1,200, Job 3 $700, and general factory use $600. Prepare a summary journal entry to record raw materials used.

*Prepare entry for the assignment of factory labor costs.*

**BE20.4 (LO 2)** Factory labor data for Dieker Company is given in BE20.2. During January, time tickets show that the factory labor of $6,000 was used as follows: Job 1 $2,200, Job 2 $1,600, Job 3 $1,400, and general factory use $800. Prepare a summary journal entry to record factory labor used.

*Prepare job cost sheets.*

**BE20.5 (LO 2)** Data pertaining to job cost sheets for Dieker Company are given in BE20.3 and BE20.4. Prepare the job cost sheets for each of the three jobs using the format shown in Illustration 20.8. (*Note:* You may omit the column for Manufacturing Overhead.)

*Compute predetermined overhead rates.*

**BE20.6 (LO 3)** Marquis Company estimates that annual manufacturing overhead costs will be $900,000. Estimated annual operating activity bases are direct labor cost $500,000, direct labor hours 50,000, and machine hours 100,000. Compute the predetermined overhead rate for each activity base.

*Assign manufacturing overhead to production.*

**BE20.7 (LO 3)** During the first quarter, Francum Company incurs the following direct labor costs: January $40,000, February $30,000, and March $50,000. For each month, prepare the entry to assign overhead to production using a predetermined rate of 70% of direct labor cost.

*Prepare entries for completion and sale of completed jobs.*

**BE20.8 (LO 4)** In March, Stinson Company completes Jobs 10 and 11. Job 10 cost $20,000 and Job 11 $30,000. On March 31, Job 10 is sold to the customer for $35,000 in cash. Journalize the entries for the completion of the two jobs and the sale of Job 10.

*Prepare entries for service salaries and wages and operating overhead.*

**BE20.9 (LO 4)** Ruiz Engineering Contractors incurred service salaries and wages of $36,000 ($28,000 direct and $8,000 indirect) on an engineering project. The company applies overhead at a rate of 25% of direct labor. Record the entries to assign service salaries and wages and to apply overhead.

*Prepare adjusting entries for under- and overapplied overhead.*

**BE20.10 (LO 5)** At December 31, balances in Manufacturing Overhead are Shimeca Company—debit $1,200, Garcia Company—credit $900. Prepare the adjusting entry for each company at December 31, assuming the adjustment is made to cost of goods sold.

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## DO IT! Exercises

**DO IT! 20.1 (LO 1)** During the current month, Wacholz Company incurs the following manufacturing costs. *Prepare journal entries for manufacturing costs.*

**a.** Purchased raw materials of $18,000 on account.

**b.** Incurred factory labor of $40,000. Of that amount, $31,000 relates to wages payable and $9,000 relates to payroll taxes payable.

**c.** Factory utilities of $3,100 are payable, prepaid factory property taxes of $2,700 have expired, and depreciation on the factory building is $9,500.

Prepare journal entries for each type of manufacturing cost. (Use a summary entry to record manufacturing overhead.)

**DO IT! 20.2 (LO 2)** Milner Company is working on two job orders. The job cost sheets show the following. *Assign costs to work in process.*

| | Job 201 | Job 202 |
|---|---|---|
| Direct materials | $7,200 | $9,000 |
| Direct labor | 4,000 | 8,000 |
| Manufacturing overhead | 5,200 | 9,800 |

Prepare the three summary entries to record the assignment of costs to Work in Process from the data on the job cost sheets.

**DO IT! 20.3 (LO 3)** Washburn Company produces earbuds. During the year, manufacturing overhead costs are estimated to be $200,000. Estimated machine usage is 2,500 hours. The company assigns overhead based on machine hours. Job No. 551 used 90 machine hours. Compute the predetermined overhead rate, determine the amount of overhead to apply to Job No. 551, and prepare the entry to apply overhead to Job No. 551 on January 15. *Compute and apply the predetermined overhead rate.*

**DO IT! 20.4 (LO 4)** During the current month, Standard Corporation completed Job 310 and Job 312. Job 310 cost $70,000 and Job 312 cost $50,000. Job 312 was sold on account for $90,000. Journalize the entries for the completion of the two jobs and the sale of Job 312. *Prepare entries for completion and sale of jobs.*

**DO IT! 20.5 (LO 5)** For Eckstein Company, the predetermined overhead rate is 130% of direct labor cost. During the month, Eckstein incurred $100,000 of factory labor costs, of which $85,000 is direct labor and $15,000 is indirect labor. Actual overhead incurred was $115,000. Compute the amount of manufacturing overhead applied during the month. Determine the amount of under- or overapplied manufacturing overhead. *Apply manufacturing overhead and determine under- or overapplication.*

## Exercises

**E20.1 (LO 1, 2)** The wages payable related to the factory workers for Larkin Company during the month of January are $76,000. The employer's payroll taxes for the factory payroll are $8,000. The fringe benefits to be paid by the employer on this payroll are $6,000. Of the total accumulated cost of factory labor, 85% is related to direct labor and 15% is attributable to indirect labor. *Prepare entries for factory labor.*

### Instructions

**a.** Prepare the entry to record the factory labor costs for the month of January.

**b.** Prepare the entry to assign factory labor to production.

**E20.2 (LO 1, 2, 3, 4)** Stine Company uses a job order cost system. On May 1, the company has a balance in Work in Process Inventory of $3,500 and two jobs in process: Job No. 429 $2,000, and Job No. 430 $1,500. During May, a summary of source documents reveals the following. *Prepare journal entries for manufacturing costs.*

| Job Number | Materials Requisition Slips | | Labor Time Tickets | |
|---|---|---|---|---|
| 429 | $2,500 | | $1,900 | |
| 430 | 3,500 | | 3,000 | |
| 431 | 4,400 | $10,400 | 7,600 | $12,500 |
| General use | | 800 | | 1,200 |
| | | $11,200 | | $13,700 |

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Stine Company applies manufacturing overhead to jobs at an overhead rate of 60% of direct labor cost. Job No. 429 is completed during the month.

**Instructions**

**a.** Prepare summary journal entries to record (1) the requisition slips, (2) the time tickets, (3) the assignment of manufacturing overhead to jobs, and (4) the completion of Job No. 429.

**b.** Post the entries to Work in Process Inventory, and prove the agreement of the control account with the job cost sheets. (Use a T-account.)

*Analyze a job cost sheet and prepare entries for manufacturing costs.*

**E20.3 (LO 1, 2, 3, 4)** A job order cost sheet for Ryan Company is shown below.

| **Job No. 92** | | | **For 2,000 Units** |
|---|---|---|---|
| Date | Direct Materials | Direct Labor | Manufacturing Overhead |
| Beg. bal. Jan. 1 | 5,000 | 6,000 | 4,200 |
| 8 | 6,000 | | |
| 12 | | 8,000 | 6,400 |
| 25 | 2,000 | | |
| 27 | | 4,000 | 3,200 |
| | 13,000 | 18,000 | 13,800 |

| | |
|---|---|
| Cost of completed job: | |
| Direct materials | $13,000 |
| Direct labor | 18,000 |
| Manufacturing overhead | 13,800 |
| Total cost | $44,800 |
| Unit cost ($44,800 ÷ 2,000) | $22.40 |

**Instructions**

**a.** On the basis of the foregoing data, answer the following questions.

**1.** What was the balance in Work in Process Inventory on January 1 if this was the only unfinished job?

**2.** If manufacturing overhead is applied on the basis of direct labor cost, what overhead rate was used in each year?

**b.** Prepare summary entries at January 31 to record the current year's transactions pertaining to Job No. 92.

*Analyze costs of manufacturing and determine missing amounts.*

**E20.4 (LO 1, 5)** Manufacturing cost data for Orlando Company, which uses a job order cost system, are presented below.

| | Case A | Case B |
|---|---|---|
| Direct materials used | $ (a) | $ 83,000 |
| Direct labor | 50,000 | 140,000 |
| Manufacturing overhead applied | 42,500 | (d) |
| Total manufacturing costs | 145,650 | (e) |
| Work in process 1/1/20 | (b) | 15,500 |
| Total cost of work in process | 201,500 | (f) |
| Work in process 12/31/20 | (c) | 11,800 |
| Cost of goods manufactured | 192,300 | (g) |

**Instructions**

Indicate the missing amount for each letter. Assume that in all cases manufacturing overhead is applied on the basis of direct labor cost and the rate is the same.

*Compute the manufacturing overhead rate and under- or overapplied overhead.*

Excel

**E20.5 (LO 3, 5)** Ikerd Company applies manufacturing overhead to jobs on the basis of machine hours used. Overhead costs are estimated to total $300,000 for the year, and machine usage is estimated at 125,000 hours.

For the year, $322,000 of overhead costs are incurred and 130,000 hours are used.

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**Instructions**

**a.** Compute the manufacturing overhead rate for the year.

**b.** What is the amount of under- or overapplied overhead at December 31?

**c.** Prepare the adjusting entry to assign the under- or overapplied overhead for the year to cost of goods sold.

**E20.6 (LO 1, 2, 3, 4)** A job cost sheet of Sandoval Company is given below.

*Analyze job cost sheet and prepare entry for completed job.*

**Job Cost Sheet**

JOB NO. 469 Quantity 2,500
ITEM White Lion Cages Date Requested 7/2
FOR Todd Company Date Completed 7/31

| Date | Direct Materials | Direct Labor | Manufacturing Overhead |
|---|---|---|---|
| 7/10 | 700 | | |
| 12 | 900 | | |
| 15 | | 440 | 550 |
| 22 | | 380 | 475 |
| 24 | 1,600 | | |
| 27 | 1,500 | | |
| 31 | | 540 | 675 |

| | |
|---|---|
| Cost of completed job: | |
| Direct materials | |
| Direct labor | |
| Manufacturing overhead | |
| Total cost | |
| Unit cost | |

**Instructions**

**a.** Answer the following questions.

**1.** What are the source documents for direct materials, direct labor, and manufacturing overhead costs assigned to this job?

**2.** Overhead is applied on the basis of direct labor cost. What is the predetermined manufacturing overhead rate?

**3.** What are the total cost and the unit cost of the completed job? (Round unit cost to nearest cent.)

**b.** Prepare the entry to record the completion of the job.

**E20.7 (LO 1, 2, 3, 4)** Crawford Corporation incurred the following transactions.

*Prepare entries for manufacturing and nonmanufacturing costs.*

**1.** Purchased raw materials on account $46,300.

**2.** Raw materials of $36,000 were requisitioned to the factory. An analysis of the materials requisition slips indicated that $6,800 was classified as indirect materials.

**3.** Factory labor costs incurred were $59,900, of which $51,000 pertained to factory wages payable and $8,900 pertained to employer payroll taxes payable.

**4.** Time tickets indicated that $54,000 was direct labor and $5,900 was indirect labor.

**5.** Manufacturing overhead costs incurred on account were $80,500.

**6.** Depreciation on the company's office building was $8,100.

**7.** Manufacturing overhead was applied at the rate of 150% of direct labor cost.

**8.** Goods costing $88,000 were completed and transferred to finished goods.

**9.** Finished goods costing $75,000 to manufacture were sold on account for $103,000.

**Instructions**

Journalize the transactions. (Omit explanations.)

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*Prepare entries for manufacturing and nonmanufacturing costs.*

**E20.8 (LO 1, 2, 3, 4)** Enos Printing Corp. uses a job order cost system. The following data summarize the operations related to the first quarter's production.

1. Materials purchased on account $192,000, and factory wages incurred $87,300.
2. Materials requisitioned and factory labor used by job:

| Job Number | Materials | Factory Labor |
|---|---|---|
| A20 | $ 35,240 | $18,000 |
| A21 | 42,920 | 22,000 |
| A22 | 36,100 | 15,000 |
| A23 | 39,270 | 25,000 |
| General factory use | 4,470 | 7,300 |
| | $158,000 | $87,300 |

3. Manufacturing overhead costs incurred on account $49,500.
4. Depreciation on factory equipment $14,550.
5. Depreciation on the company's office building was $14,300.
6. Manufacturing overhead rate is 90% of direct labor cost.
7. Jobs completed during the quarter: A20, A21, and A23.

**Instructions**

Prepare entries to record the operations summarized above. Prepare a schedule showing the individual cost elements and total cost for each job in item 7.

*Prepare a cost of goods manufactured schedule and partial financial statements.*

**E20.9 (LO 1, 5)** At May 31, 2020, the accounts of Lopez Company show the following.

1. May 1 inventories—finished goods $12,600, work in process $14,700, and raw materials $8,200.
2. May 31 inventories—finished goods $9,500, work in process $15,900, and raw materials $7,100.
3. Debit postings to work in process were direct materials $62,400, direct labor $50,000, and manufacturing overhead applied $40,000. (Assume that overhead applied was equal to overhead incurred.)
4. Sales revenue totaled $215,000.

**Instructions**

**a.** Prepare a condensed cost of goods manufactured schedule for May 2020.

**b.** Prepare an income statement for May 2020 through gross profit.

**c.** Indicate the balance sheet presentation of the manufacturing inventories at May 31, 2020.

*Compute work in process and finished goods from job cost sheets.*

**E20.10 (LO 2, 4)** Tierney Company begins operations on April 1. Information from job cost sheets shows the following.

| | Manufacturing Costs Assigned | | | |
|---|---|---|---|---|
| Job Number | April | May | June | Month Completed |
| 10 | $5,200 | $4,400 | | May |
| 11 | 4,100 | 3,900 | $2,000 | June |
| 12 | 1,200 | | | April |
| 13 | | 4,700 | 4,500 | June |
| 14 | | 5,900 | 3,600 | Not complete |

Job 12 was completed in April. Job 10 was completed in May. Jobs 11 and 13 were completed in June. Each job was sold for 25% above its cost in the month following completion.

**Instructions**

**a.** What is the balance in Work in Process Inventory at the end of each month?

**b.** What is the balance in Finished Goods Inventory at the end of each month?

**c.** What is the gross profit for May, June, and July?

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**E20.11 (LO 1, 3, 4)** **Service** The following are the job cost related accounts for the law firm of Colaw Associates and their manufacturing equivalents:

*Prepare entries for costs of services provided.*

| Law Firm Accounts | Manufacturing Firm Accounts |
|---|---|
| Supplies | Raw Materials |
| Salaries and Wages Payable | Factory Wages Payable |
| Operating Overhead | Manufacturing Overhead |
| Service Contracts in Process | Work in Process |
| Cost of Completed Service Contracts | Cost of Goods Sold |

Cost data for the month of March follow.

1. Purchased supplies on account $1,800.
2. Issued supplies $1,200 (60% direct and 40% indirect).
3. Assigned labor costs based on time cards for the month which indicated labor costs of $70,000 (80% direct and 20% indirect).
4. Operating overhead costs incurred for cash totaled $40,000.
5. Operating overhead is applied at a rate of 90% of direct labor cost.
6. Work completed totaled $75,000.

**Instructions**

**a.** Journalize the transactions for March. (Omit explanations.)

**b.** Determine the balance of the Service Contracts in Process account. (Use a T-account.)

**E20.12 (LO 2, 3, 4)** **Service** Don Lieberman and Associates, a CPA firm, uses job order costing to capture the costs of its audit jobs. There were no audit jobs in process at the beginning of November. Listed below are data concerning the three audit jobs conducted during November.

*Determine cost of jobs and ending balance in work in process and overhead accounts.*

| | Waters Inc. | Renolds Inc. | Bayfield Inc. |
|---|---|---|---|
| Direct materials | $600 | $400 | $200 |
| Auditor labor costs | $5,400 | $6,600 | $3,375 |
| Auditor hours | 72 | 88 | 45 |

Overhead costs are applied to jobs on the basis of auditor hours, and the predetermined overhead rate is $50 per auditor hour. The Waters Inc. job is the only incomplete job at the end of November. Actual overhead for the month was $11,000.

**Instructions**

**a.** Determine the cost of each job.

**b.** Indicate the balance of the Service Contracts in Process account at the end of November.

**c.** Calculate the ending balance of the Operating Overhead account for November.

**E20.13 (LO 3, 5)** **Service** Tombert Decorating uses a job order cost system to collect the costs of its interior decorating business. Each client's consultation is treated as a separate job. Overhead is applied to each job based on the number of decorator hours incurred. Listed below are data for the current year.

*Determine predetermined overhead rate, apply overhead, and determine whether balance under- or overapplied.*

| | |
|---|---|
| Estimated overhead | $960,000 |
| Actual overhead | $982,800 |
| Estimated decorator hours | 40,000 |
| Actual decorator hours | 40,500 |

The company uses Operating Overhead in place of Manufacturing Overhead.

**Instructions**

**a.** Compute the predetermined overhead rate.

**b.** Prepare the entry to apply the overhead for the year.

**c.** Determine whether the overhead was under- or overapplied and by how much.

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## Problems: Set A

*Prepare entries in a job order cost system and job cost sheets.*

**P20.1A (LO 1, 2, 3, 4, 5)** Lott Company uses a job order cost system and applies overhead to production on the basis of direct labor costs. On January 1, 2020, Job 50 was the only job in process. The costs incurred prior to January 1 on this job were as follows: direct materials $20,000, direct labor $12,000, and manufacturing overhead $16,000. As of January 1, Job 49 had been completed at a cost of $90,000 and was part of finished goods inventory. There was a $15,000 balance in the Raw Materials Inventory account.

During the month of January, Lott Company began production on Jobs 51 and 52, and completed Jobs 50 and 51. Jobs 49 and 50 were also sold on account during the month for $122,000 and $158,000, respectively. The following additional events occurred during the month.

1. Purchased additional raw materials of $90,000 on account.
2. Incurred factory labor costs of $70,000. Of this amount $16,000 related to employer payroll taxes.
3. Incurred manufacturing overhead costs as follows: indirect materials $17,000, indirect labor $20,000, depreciation expense on equipment $12,000, and various other manufacturing overhead costs on account $16,000.
4. Assigned direct materials and direct labor to jobs as follows.

| Job No. | Direct Materials | Direct Labor |
|---|---|---|
| 50 | $10,000 | $ 5,000 |
| 51 | 39,000 | 25,000 |
| 52 | 30,000 | 20,000 |

### Instructions

**a.** Calculate the predetermined overhead rate for 2020, assuming Lott Company estimates total manufacturing overhead costs of $840,000, direct labor costs of $700,000, and direct labor hours of 20,000 for the year.

**b.** Open job cost sheets for Jobs 50, 51, and 52. Enter the January 1 balances on the job cost sheet for Job 50.

**c.** Prepare the journal entries to record the purchase of raw materials, the factory labor costs incurred, and the manufacturing overhead costs incurred during the month of January.

**d.** Prepare the journal entries to record the assignment of direct materials, direct labor, and manufacturing overhead costs to production. In assigning manufacturing overhead costs, use the overhead rate calculated in (a). Post all costs to the job cost sheets as necessary.

e. Job 50, $69,000
Job 51, $94,000

**e.** Total the job cost sheets for any job(s) completed during the month. Prepare the journal entry (or entries) to record the completion of any job(s) during the month.

**f.** Prepare the journal entry (or entries) to record the sale of any job(s) during the month.

**g.** What is the balance in the Finished Goods Inventory account at the end of the month? What does this balance consist of?

**h.** What is the amount of over- or underapplied overhead?

*Prepare entries in a job order cost system and partial income statement.*

**P20.2A (LO 1, 2, 3, 4, 5)** For the year ended December 31, 2020, the job cost sheets of Cinta Company contained the following data.

| Job Number | Explanation | Direct Materials | Direct Labor | Manufacturing Overhead | Total Costs |
|---|---|---|---|---|---|
| 7640 | Balance 1/1 | $25,000 | $24,000 | $28,800 | $ 77,800 |
| | Current year's costs | 30,000 | 36,000 | 43,200 | 109,200 |
| 7641 | Balance 1/1 | 11,000 | 18,000 | 21,600 | 50,600 |
| | Current year's costs | 43,000 | 48,000 | 57,600 | 148,600 |
| 7642 | Current year's costs | 58,000 | 55,000 | 66,000 | 179,000 |

Other data:

1. Raw materials inventory totaled $15,000 on January 1. During the year, $140,000 of raw materials were purchased on account.
2. Finished goods on January 1 consisted of Job No. 7638 for $87,000 and Job No. 7639 for $92,000.

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3. Job No. 7640 and Job No. 7641 were completed during the year.
4. Job Nos. 7638, 7639, and 7641 were sold on account for $530,000.
5. Manufacturing overhead incurred on account totaled $120,000.
6. Other manufacturing overhead consisted of indirect materials $14,000, indirect labor $18,000, and depreciation on factory machinery $8,000.

### Instructions

**a.** Prove the agreement of Work in Process Inventory with job cost sheets pertaining to unfinished work. (*Hint:* Use a single T-account for Work in Process Inventory.) Calculate each of the following, then post each to the T-account: (1) beginning balance, (2) direct materials, (3) direct labor, (4) manufacturing overhead, and (5) completed jobs.

a. $179,000; Job 7642: $179,000

**b.** Prepare the adjusting entry for manufacturing overhead, assuming the balance is allocated entirely to Cost of Goods Sold.

b. Amount = $6,800

**c.** Determine the gross profit to be reported for 2020.

c. $158,600

**P20.3A (LO 1, 2, 3, 4, 5)** Case Inc. is a construction company specializing in custom patios. The patios are constructed of concrete, brick, fiberglass, and lumber, depending upon customer preference. On June 1, 2020, the general ledger for Case Inc. contains the following data.

*Prepare entries in a job order cost system and cost of goods manufactured schedule.*

Excel

| | | | |
|---|---|---|---|
| Raw Materials Inventory | $4,200 | Manufacturing Overhead Applied | $32,640 |
| Work in Process Inventory | $5,540 | Manufacturing Overhead Incurred | $31,650 |

Subsidiary data for Work in Process Inventory on June 1 are as follows.

**Job Cost Sheets**

| | Customer Job | | |
|---|---|---|---|
| **Cost Element** | **Rodgers** | **Stevens** | **Linton** |
| Direct materials | $ 600 | $ 800 | $ 900 |
| Direct labor | 320 | 540 | 580 |
| Manufacturing overhead | 400 | 675 | 725 |
| | $1,320 | $2,015 | $2,205 |

During June, raw materials purchased on account were $4,900, and all wages were paid. Additional overhead costs consisted of depreciation on equipment $900 and miscellaneous costs of $400 incurred on account.

A summary of materials requisition slips and time tickets for June shows the following.

| Customer Job | Materials Requisition Slips | Time Tickets |
|---|---|---|
| Rodgers | $ 800 | $ 850 |
| Koss | 2,000 | 800 |
| Stevens | 500 | 360 |
| Linton | 1,300 | 1,200 |
| Rodgers | 300 | 390 |
| | 4,900 | 3,600 |
| General use | 1,500 | 1,200 |
| | $6,400 | $4,800 |

Overhead was charged to jobs at the same rate of $1.25 per dollar of direct labor cost. The patios for customers Rodgers, Stevens, and Linton were completed during June and sold for a total of $18,900. Each customer paid in full.

### Instructions

**a.** Journalize the June transactions: (1) for purchase of raw materials, factory labor costs incurred, and manufacturing overhead costs incurred; (2) assignment of direct materials, labor, and overhead to production; and (3) completion of jobs and sale of goods.

**b.** Post the entries to Work in Process Inventory.

**c.** Reconcile the balance in Work in Process Inventory with the costs of unfinished jobs.

**d.** Prepare a cost of goods manufactured schedule for June.

d. Cost of goods manufactured $14,740

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*Compute predetermined overhead rates, apply overhead, and calculate under- or overapplied overhead.*

**P20.4A (LO 3, 5)** Agassi Company uses a job order cost system in each of its three manufacturing departments. Manufacturing overhead is applied to jobs on the basis of direct labor cost in Department D, direct labor hours in Department E, and machine hours in Department K.

In establishing the predetermined overhead rates for 2020, the following estimates were made for the year.

| | Department | | |
|---|---|---|---|
| | D | E | K |
| Manufacturing overhead | $1,200,000 | $1,500,000 | $900,000 |
| Direct labor costs | $1,500,000 | $1,250,000 | $450,000 |
| Direct labor hours | 100,000 | 125,000 | 40,000 |
| Machine hours | 400,000 | 500,000 | 120,000 |

During January, the job cost sheets showed the following costs and production data.

| | Department | | |
|---|---|---|---|
| | D | E | K |
| Direct materials used | $140,000 | $126,000 | $78,000 |
| Direct labor costs | $120,000 | $110,000 | $37,500 |
| Manufacturing overhead incurred | $ 99,000 | $124,000 | $79,000 |
| Direct labor hours | 8,000 | 11,000 | 3,500 |
| Machine hours | 34,000 | 45,000 | 10,400 |

a. 80%, $12, $7.50
b. $356,000, $368,000, $193,500
c. $3,000, $(8,000), $1,000

**Instructions**

**a.** Compute the predetermined overhead rate for each department.

**b.** Compute the total manufacturing costs assigned to jobs in January in each department.

**c.** Compute the under- or overapplied overhead for each department at January 31.

*Analyze manufacturing accounts and determine missing amounts.*

Excel

**P20.5A (LO 1, 2, 3, 4, 5)** Phillips Corporation's fiscal year ends on November 30. The following accounts are found in its job order cost accounting system for the first month of the new fiscal year.

**Raw Materials Inventory**

| | | | | | |
|---|---|---|---|---|---|
| Dec. 1 | Beginning balance | (a) | Dec. 31 | Requisitions | 16,850 |
| 31 | Purchases | 17,225 | | | |
| Dec. 31 | Ending balance | 7,975 | | | |

**Work in Process Inventory**

| | | | | | |
|---|---|---|---|---|---|
| Dec. 1 | Beginning balance | (b) | Dec. 31 | Jobs completed | (f) |
| 31 | Direct materials | (c) | | | |
| 31 | Direct labor | 8,400 | | | |
| 31 | Overhead | (d) | | | |
| Dec. 31 | Ending balance | (e) | | | |

**Finished Goods Inventory**

| | | | | | |
|---|---|---|---|---|---|
| Dec. 1 | Beginning balance | (g) | Dec. 31 | Cost of goods sold | (i) |
| 31 | Completed jobs | (h) | | | |
| Dec. 31 | Ending balance | (j) | | | |

**Factory Labor**

| | | | | | |
|---|---|---|---|---|---|
| Dec. 31 | Factory wages | 12,025 | Dec. 31 | Wages assigned | (k) |

**Manufacturing Overhead**

| | | | | | |
|---|---|---|---|---|---|
| Dec. 31 | Indirect materials | 2,900 | Dec. 31 | Overhead applied | (m) |
| 31 | Indirect labor | (l) | | | |
| 31 | Other overhead | 1,245 | | | |

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Other data:

1. On December 1, two jobs were in process: Job No. 154 and Job No. 155. These jobs had combined direct materials costs of $9,750 and direct labor costs of $15,000. Overhead was applied at a rate that was 75% of direct labor cost.
2. During December, Job Nos. 156, 157, and 158 were started. On December 31, Job No. 158 was unfinished. This job had charges for direct materials $3,800 and direct labor $4,800, plus manufacturing overhead. All jobs, except for Job No. 158, were completed in December.
3. On December 1, Job No. 153 was in the finished goods warehouse. It had a total cost of $5,000. On December 31, Job No. 157 was the only job finished that was not sold. It had a cost of $4,000.
4. Manufacturing overhead was $1,470 underapplied in December.

### Instructions

List the letters (a) through (m) and indicate the amount pertaining to each letter.

c. $13,950
f. $52,450
i. $53,450

## Continuing Cases

### Current Designs

**CD20** Huegel Hollow Resort has ordered 20 rotomolded kayaks from **Current Designs**. Each kayak will be formed in the rotomolded oven, cooled, and then the excess plastic trimmed away. Then, the hatches, seat, ropes, and bungees will be attached to the kayak.

Dave Thill, the kayak plant manager, knows that manufacturing each kayak requires 54 pounds of polyethylene powder and a finishing kit (rope, seat, hardware, etc.). The polyethylene powder used in these kayaks costs $1.50 per pound, and the finishing kits cost $170 each. Each kayak will use two kinds of labor: 2 hours of more-skilled type I labor from people who run the oven and trim the plastic, and 3 hours of less-skilled type II labor from people who attach the hatches and seat and other hardware. The type I employees are paid $15 per hour, and the type II employees are paid $12 per hour. For purposes of this problem, assume that overhead is applied to all jobs at a rate of 150% of direct labor costs.

### Instructions

Determine the total cost of the Huegel Hollow order and the cost of each individual kayak in the order. Identify costs as direct materials, direct labor, or manufacturing overhead.

### Waterways

(*Note:* This is a continuation of the Waterways case from Chapter 19.)

**WP20** Waterways has two major public-park projects to provide with comprehensive irrigation in one of its service locations this month. Job J57 and Job K52 involve 15 acres of landscaped terrain which will require special-order sprinkler heads to meet the specifications of the project. This problem asks you to help Waterways use a job order cost system to account for production of these parts.

*Go to* **WileyPLUS** *for complete case details and instructions.*

## Comprehensive Case

Greetings Inc., a nationally recognized retailer of greeting cards and small gift items, decides to employ Internet technology to expand its sales opportunities. For this case, you will employ traditional job order costing techniques and then evaluate the resulting product costs.

*Go to* **WileyPLUS** *for complete case details and instructions.*

***Comprehensive Cases*** *present realistic business situations that require students to apply topics learned in this and previous chapters.*

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## Expand Your Critical Thinking

### Decision-Making Across the Organization

**CT20.1** Khan Products Company uses a job order cost system. For a number of months, there has been an ongoing rift between the sales department and the production department concerning a special-order product, TC-1. TC-1 is a seasonal product that is manufactured in batches of 1,000 units. TC-1 is sold at cost plus a markup of 40% of cost.

The sales department is unhappy because fluctuating unit production costs significantly affect selling prices. Sales personnel complain that this has caused excessive customer complaints and the loss of considerable orders for TC-1.

The production department maintains that each job order must be fully costed on the basis of the costs incurred during the period in which the goods are produced. Production personnel maintain that the only real solution is for the sales department to increase sales in the slack periods.

Andrea Parley, president of the company, asks you as the company accountant to collect quarterly data for the past year on TC-1. From the cost accounting system, you accumulate the following production quantity and cost data.

| | Quarter | | | |
|---|---|---|---|---|
| **Costs** | **1** | **2** | **3** | **4** |
| Direct materials | $100,000 | $220,000 | $ 80,000 | $200,000 |
| Direct labor | 60,000 | 132,000 | 48,000 | 120,000 |
| Manufacturing overhead | 105,000 | 153,000 | 97,000 | 125,000 |
| Total | $265,000 | $505,000 | $225,000 | $445,000 |
| Production in batches | 5 | 11 | 4 | 10 |
| Unit cost (per batch) | $ 53,000 | $ 45,909 | $ 56,250 | $ 44,500 |

#### Instructions

With the class divided into groups, answer the following questions.

**a.** What manufacturing cost element is responsible for the fluctuating unit costs? Why?

**b.** What is your recommended solution to the problem of fluctuating unit cost?

**c.** Restate the quarterly data on the basis of your recommended solution.

### Managerial Analysis

**CT20.2** In the course of routine checking of all journal entries prior to preparing year-end reports, Betty Eller discovered several strange entries. She recalled that the president's son Joe had come in to help out during an especially busy time and that he had recorded some journal entries. She was relieved that there were only a few of his entries, and even more relieved that he had included rather lengthy explanations. The entries Joe made were:

**(1)**

| | | |
|---|---|---|
| Work in Process Inventory | 25,000 | |
| Cash | | 25,000 |

(This is for materials put into process. I don't find the record that we paid for these, so I'm crediting Cash because I know we'll have to pay for them sooner or later.)

**(2)**

| | | |
|---|---|---|
| Manufacturing Overhead | 12,000 | |
| Cash | | 12,000 |

(This is for bonuses paid to salespeople. I know they're part of overhead, and I can't find an account called "Non-Factory Overhead" or "Other Overhead" so I'm putting it in Manufacturing Overhead. I have the check stubs, so I know we paid these.)

**(3)**

| | | |
|---|---|---|
| Wages Expense | 120,000 | |
| Cash | | 120,000 |

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(This is for the factory workers' wages. I have a note that employer payroll taxes are $18,000. I still think that's part of wages expense and that we'll have to pay it all in cash sooner or later, so I credited Cash for the wages and the taxes.)

**(4)**

| | | |
|---|---|---|
| Work in Process Inventory | 3,000 | |
| Raw Materials Inventory | | 3,000 |

(This is for the glue used in the factory. I know we used this to make the products, even though we didn't use very much on any one of the products. I got it out of inventory, so I credited an inventory account.)

### Instructions

**a.** How should Joe have recorded each of the four events?

**b.** If the entry was not corrected, which financial statements (income statement or balance sheet) would be affected? What balances would be overstated or understated?

## Real-World Focus

**CT20.3** The **Institute of Management Accountants (IMA)** sponsors a certification for management accountants, allowing them to obtain the title of Certified Management Accountant.

### Instructions

Go to the IMA website, choose **About IMA**, choose **CMA Certification**, and then **Getting Started**. Answer part (a) below. Next, choose **CMA Certification**, then **Current CMAs**, then **Maintain Your Certification**, and then click on **Download the CPE Requirements and Rules**. Answer part (b) below.

**a.** What is the experience qualification requirement?

**b.** How many hours of continuing education are required, and what types of courses qualify?

## Communication Activity

**CT20.4** You are the management accountant for Williams Company. Your company does custom carpentry work and uses a job order cost system. Williams sends detailed job cost sheets to its customers, along with an invoice. The job cost sheets show the date materials were used, the dollar cost of materials, and the hours and cost of labor. A predetermined overhead application rate is used, and the total overhead applied is also listed.

Nancy Kopay is a customer who recently had custom cabinets installed. Along with her check in payment for the work done, she included a letter. She thanked the company for including the detailed cost information but questioned why overhead was estimated. She stated that she would be interested in knowing exactly what costs were included in overhead, and she thought that other customers would, too.

### Instructions

Prepare a letter to Ms. Kopay (address: 123 Cedar Lane, Altoona, KS 66651) and tell her why you did not send her information on exact costs of overhead included in her job. Respond to her suggestion that you provide this information.

## Ethics Case

**CT20.5** **Service** LRF Printing provides printing services to many different corporate clients. Although LRF bids most jobs, some jobs, particularly new ones, are negotiated on a "cost-plus" basis. Cost-plus means that the buyer is willing to pay the actual cost plus a return (profit) on these costs to LRF.

Alice Reiley, controller for LRF, has recently returned from a meeting where LRF's president stated that he wanted her to find a way to charge more costs to any project that was on a cost-plus basis. The president noted that the company needed more profits to meet its stated goals this period. By charging more costs to the cost-plus projects and therefore fewer costs to the jobs that were bid, the company should be able to increase its profit for the current year.

Alice knew why the president wanted to take this action. Rumors were that he was looking for a new position and if the company reported strong profits, the president's opportunities would be enhanced. Alice also recognized that she could probably increase the cost of certain jobs by changing the basis used to assign manufacturing overhead.

### Instructions

**a.** Who are the stakeholders in this situation?

**b.** What are the ethical issues in this situation?

**c.** What would you do if you were Alice Reiley?

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## All About You

**CT20.6** Many of you will work for a small business. Some of you will even own your own business. In order to operate a small business, you will need a good understanding of managerial accounting, as well as many other skills. Much information is available to assist people who are interested in starting a new business. A great place to start is the website provided by the **Small Business Administration**, which is an agency of the federal government whose purpose is to support small businesses.

### Instructions

Go to the Small Business Administration website, search "Is entrepreneurship for you," and then answer part (a) below. Next, search "10 steps to starting a business" and then answer part (b) below.

**a.** What are some of the characteristics required of a small business owner?

**b.** What are the 10 steps for starting a business?

## Considering Your Costs and Benefits

**CT20.7** After graduating, you might decide to start a small business. As discussed in this chapter, owners of any business need to know how to calculate the cost of their products. In fact, many small businesses fail because they don't accurately calculate their product costs, so they don't know if they are making a profit or losing money—until it's too late.

Suppose that you decide to start a landscape business. You use an old pickup truck that you've fully paid for. You store the truck and other equipment in your parents' barn, and you store trees and shrubs on their land. Your parents will not charge you for the use of these facilities for the first two years, but beginning in the third year they will charge a reasonable rent. Your mother helps you by answering phone calls and providing customers with information. She doesn't charge you for this service, but she plans on doing it for only your first two years in business. In pricing your services, should you include charges for the truck, the barn, the land, and your mother's services when calculating your product cost? The basic arguments for and against are as follows.

**YES:** If you don't include charges for these costs, your costs are understated and your profitability is overstated.

**NO:** At this point, you are not actually incurring costs related to these activities; therefore, you shouldn't record charges.

### Instructions

Write a response indicating your position regarding this situation. Provide support for your view.

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# Process Costing

## Chapter Preview

As the following Feature Story describes, the cost accounting system used by companies such as **Jones Soda** is **process cost accounting**. In contrast to job order cost accounting, which focuses on the individual job, process cost accounting focuses on the *processes* involved in mass-producing products that are identical or very similar in nature. The primary objective of this chapter is to explain and illustrate process costing.

## Feature Story

### The Little Guy Who Could

It isn't easy for a small company to get a foothold in the bottled beverage business. The giants, **The Coca-Cola Company** and **PepsiCo Inc.**, vigilantly defend their turf, constantly watching for new trends and opportunities. It is nearly impossible to get shelf space in stores, and consumer tastes can change faster than a bottle of soda can lose its fizz. But **Jones Soda Co.**, headquartered in Seattle, has overcome these and other obstacles to make a name for itself. Its corporate motto is, "Run with the little guy . . . create some change."

The company started as a Canadian distributor of other companies' beverages. Soon, it decided to make its own products under the corporate name Urban Juice and Soda Company. Eventually, its name changed to Jones Soda—the name of its most popular product. From the very start, Jones Soda was different. It sold soda from machines placed in tattoo parlors and piercing shops, and it sponsored a punk rock band as well as surfers and snowboarders. At one time,

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the company's product was the official drink at the **Seattle Seahawks**' stadium and was served on **Alaskan Airlines**.

Today, Jones Soda makes a wide variety of products: soda-flavored candy, energy drinks, and product-promoting gear that includes t-shirts, sweatshirts, caps, shorts, and calendars. Its most profitable product is still its multi-flavored, pure cane soda with its creative labeling. If you've seen Jones Soda on a store shelf, then you know that it appears to have an infinite variety of labels. The bottle labels are actually created by customers and submitted on the company's website. If you would like some soda with a custom label of your own, you can design and submit a label and order a 12-pack.

Because Jones Soda has a dizzying array of product variations, keeping track of costs is of vital importance. Recently, management developed a reorganization plan that involved cost-cutting from top to bottom and eliminating unprofitable products. No matter how good your products are, if you don't keep your costs under control, you are likely to fail. Jones Soda's managers need accurate cost information regarding each primary product and each variation to ensure profitability. So while its marketing approach differs dramatically from the giants, Jones Soda needs the same kind of cost information as the big guys.

**Video** **Watch the Jones Soda video in WileyPLUS to learn more about process costing in the real world.**

# Chapter Outline

## LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Discuss the uses of a process cost system and how it compares to a job order system. | • Uses of process cost systems<br>• Process costing for service companies<br>• Comparing job order and process cost systems | **DO IT! 1** Compare Job Order and Process Cost Systems |
| **LO 2** Explain the flow of costs in a process cost system and the journal entries to assign manufacturing costs. | • Process cost flow<br>• Assigning manufacturing costs | **DO IT! 2** Manufacturing Costs in Process Costing |
| **LO 3** Compute equivalent units. | • Weighted-average method<br>• Refinements on the method | **DO IT! 3** Equivalent Units |
| **LO 4** Complete the four steps to prepare a production cost report. | • Physical unit flow<br>• Equivalent units of production<br>• Unit production costs<br>• Cost reconciliation schedule<br>• Production cost report | **DO IT! 4** Cost Reconciliation Schedule |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with ORION for additional tutorials and practice opportunities.**

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# Overview of Process Cost Systems

**LEARNING OBJECTIVE 1**

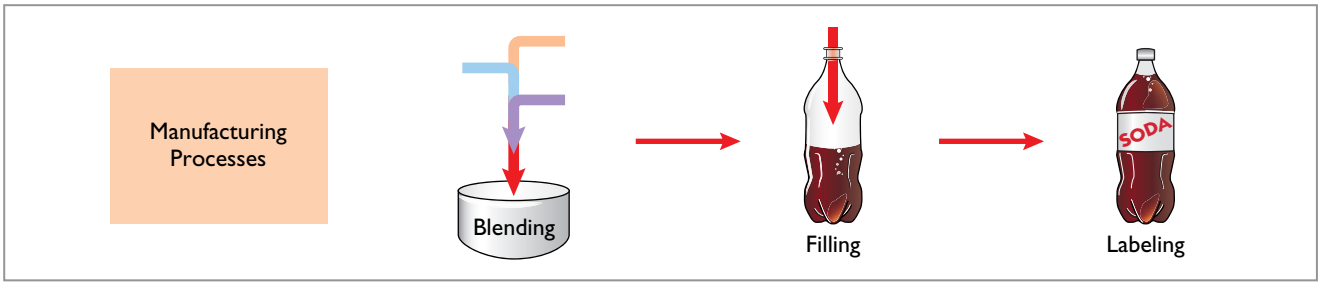
Discuss the uses of a process cost system and how it compares to a job order system.

## Uses of Process Cost Systems

Companies use **process cost systems** to apply costs to similar products that are mass-produced in a continuous fashion. **Jones Soda Co.** uses a process cost system: Production of the soda, once it begins, continues until the completed bottles of soda emerge. The processing is the same for the entire production run—with precisely the same amount of materials, labor, and overhead. Each finished bottle of soda is indistinguishable from another.

A company such as **USX** uses process costing in the manufacturing of steel. **Kellogg** and **General Mills** use process costing for cereal production; **ExxonMobil** uses process costing for its oil refining. **Sherwin Williams** uses process costing for its paint products. At a bottling company like Jones Soda, the manufacturing process begins with the blending of ingredients. Next, automated machinery moves the bottles into position and fills them. The production process then caps, labels, packages, and forwards the bottles to the finished goods warehouse. **Illustration 21.1** shows this process.

**ILLUSTRATION 21.1** **Manufacturing processes**




For Jones Soda, as well as the other companies just mentioned, once production begins, it continues until the finished product emerges. Each unit of finished product is like every other unit.

In comparison, a job order cost system assigns costs to a *specific job*. Examples are the construction of a customized home, the making of a movie, or the manufacturing of a specialized machine. **Illustration 21.2** provides examples of companies that primarily use either a process cost system or a job order cost system.

**ILLUSTRATION 21.2** **Process cost and job order cost companies and products**

| Process Cost System | | Job Order Cost System | |
|---|---|---|---|
| **Company** | **Product** | **Company** | **Product** |
| Jones Soda, PepsiCo | Soft drinks | Young & Rubicam, J. Walter Thompson | Advertising |
| ExxonMobil, Royal Dutch Shell | Oil | Disney, Warner Brothers | Movies |
| Intel, Advanced Micro Devices | Computer chips | Center Ice Consultants, Ice Pro | Ice rinks |
| Dow Chemical, DuPont | Chemicals | Kaiser, Mayo Clinic | Patient health care |

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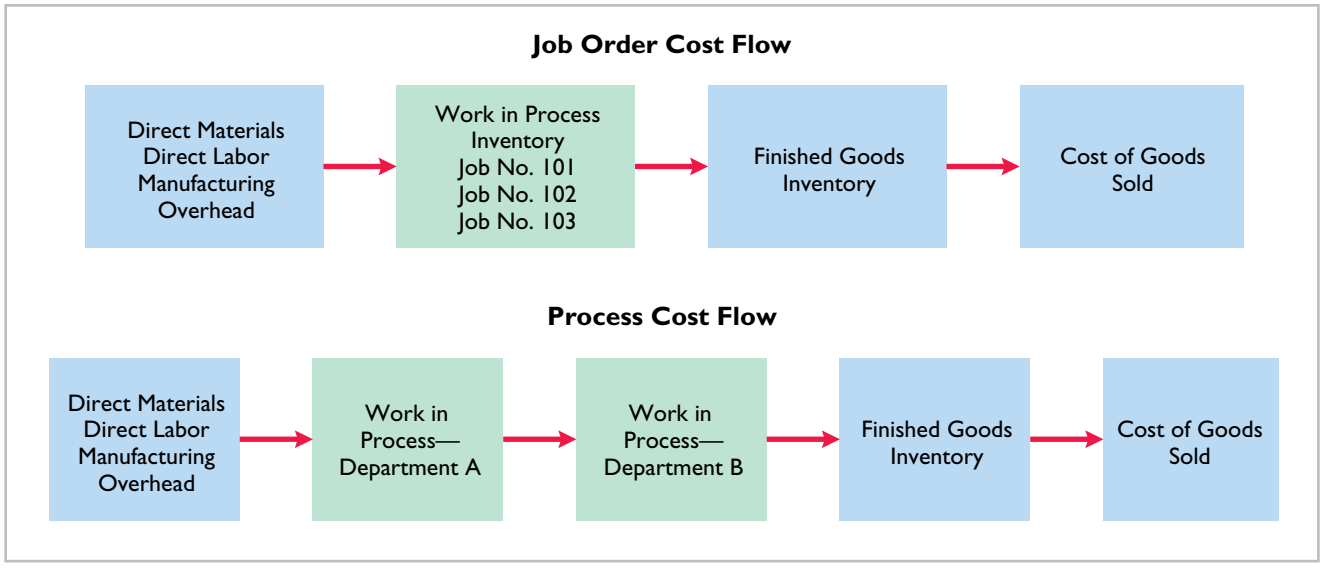
## Process Costing for Service Companies

When considering service companies, you might initially think of specific, nonroutine tasks, such as rebuilding an automobile engine, consulting on a business acquisition, or defending a major lawsuit. However, many service companies perform repetitive, routine work. For example, **Jiffy Lube** regularly performs oil changes. **H&R Block** focuses on the routine aspects of basic tax practice. Service companies that perform individualized, nonroutine services will probably benefit from using a job order cost system. Those that perform routine, repetitive services will probably prefer a process cost system.

## Similarities and Differences Between Job Order Cost and Process Cost Systems

In a job order cost system, companies assign costs to each job. In a process cost system, companies track costs through a series of connected manufacturing processes or departments, rather than by individual jobs. Thus, companies use process cost systems when they produce a large volume of uniform or relatively homogeneous products. **Illustration 21.3** shows the basic flow of costs in these two systems.

**ILLUSTRATION 21.3** **Job order cost and process cost flow**




The following analysis highlights the basic similarities and differences between these two systems.

### Similarities

Job order cost and process cost systems are similar in three ways:

1. **The manufacturing cost elements.** Both costing systems track three manufacturing cost elements—direct materials, direct labor, and manufacturing overhead.
2. **The accumulation of the costs of materials, labor, and overhead.** Both costing systems record the acquisition of raw materials as a debit to Raw Materials Inventory, incurred factory labor as a debit to Factory Labor, and manufacturing overhead costs as debits to Manufacturing Overhead.

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3. **The flow of costs.** As noted above, both systems accumulate all manufacturing costs by debits to Raw Materials Inventory, Factory Labor, and Manufacturing Overhead. Both systems then assign these costs to the same accounts—Work in Process, Finished Goods Inventory, and Cost of Goods Sold. **The methods of assigning costs, however, differ significantly**. These differences are explained and illustrated later in the chapter.

## Differences

The differences between a job order cost and a process cost system are as follows.

1. **The number of work in process accounts used.** A job order cost system uses only one work in process account. A process cost system uses multiple work in process accounts.
2. **Documents used to track costs.** A job order cost system charges costs to individual jobs and summarizes them in a job cost sheet. A process cost system summarizes costs in a production cost report for each department.
3. **The point at which costs are totaled.** A job order cost system totals costs when the job is completed. A process cost system totals costs at the end of a period of time.
4. **Unit cost computations.** In a job order cost system, the unit cost is the total cost per job divided by the units produced for that job. In a process cost system, the unit cost is total manufacturing costs for the period divided by the equivalent units produced during the period.

Illustration 21.4 summarizes the major differences between a job order cost and a process cost system.

| Feature | Job Order Cost System | Process Cost System |
|---|---|---|
| Work in process accounts | One work in process account | Multiple work in process accounts |
| Documents used | Job cost sheets | Production cost reports |
| Determination of total manufacturing costs | Each job | Each period |
| Unit-cost computations | Cost of each job<br>Units produced for the job | Total manufacturing costs<br>Equivalent units produced during the period |

**ILLUSTRATION 21.4**
**Job order versus process cost systems**

### DO IT! 1 | Compare Job Order and Process Cost Systems

Indicate whether each of the following statements is true or false.

1. A law firm is likely to use process costing for major lawsuits.
2. A manufacturer of paintballs is likely to use process costing.
3. Both job order and process costing determine product costs at the end of a period of time, rather than when a product is completed.
4. Process costing does not keep track of manufacturing overhead.

**ACTION PLAN**

- Use job order costing in situations where unit costs are high, unit volume is low, and products are unique.
- Use process costing when there is a large volume of relatively homogeneous products.

**Solution**

**1.** False. **2.** True. **3.** False. **4.** False.

Related exercise material: **DO IT! 21.1 and E21.1.**

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# Process Cost Flow and Assigning Costs

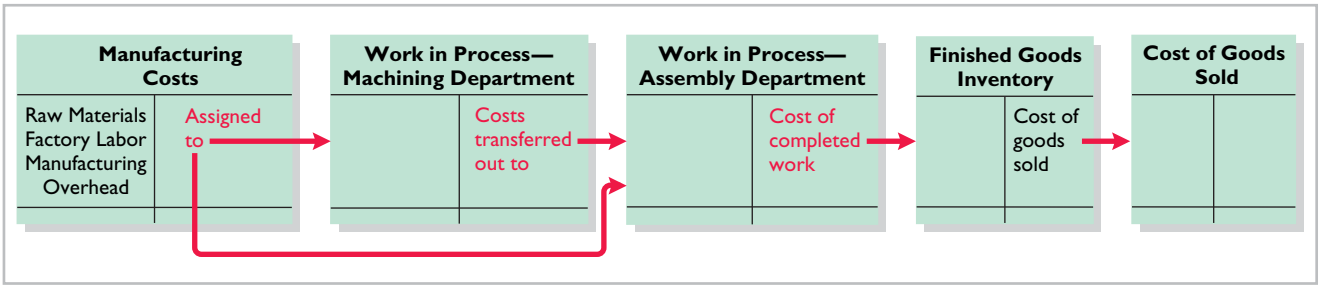
**LEARNING OBJECTIVE 2**

Explain the flow of costs in a process cost system and the journal entries to assign manufacturing costs.

## Process Cost Flow

Illustration 21.5 shows the flow of costs in the process cost system for Tyler Company. Tyler manufactures roller blade and skateboard wheels that it sells to manufacturers and retail outlets. Manufacturing consists of two processes: machining and assembly. The Machining Department shapes, hones, and drills the raw materials. The Assembly Department assembles and packages the wheels.

**ILLUSTRATION 21.5** Flow of costs in process cost system




As the flow of costs indicates, the company can add materials, labor, and manufacturing overhead in both the Machining and Assembly Departments. When it finishes its work, the Machining Department transfers the partially completed units to the Assembly Department. The Assembly Department finishes the goods and then transfers them to the finished goods inventory. Upon sale, Tyler removes the goods from the finished goods inventory. Within each department, a similar set of activities is performed on each unit processed.

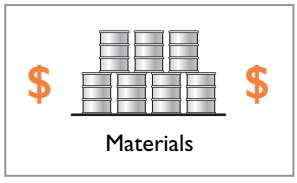
## Assigning Manufacturing Costs—Journal Entries

As indicated, the accumulation of the costs of materials, labor, and manufacturing overhead is the same in a process cost system as in a job order cost system. That is, both systems follow these procedures:

- Debit all raw materials acquired to Raw Materials Inventory at the time of purchase.
- Debit all factory labor to Factory Labor as labor costs are incurred.
- Debit overhead costs to Manufacturing Overhead as these costs are incurred.

However, the assignment of the three manufacturing cost elements to Work in Process in a process cost system is different from a job order cost system. Here we'll look at how companies assign these manufacturing cost elements in a process cost system.

### Materials Costs




All raw materials issued for production are a materials cost to the producing department. A process cost system may use materials requisition slips, but **it generally requires fewer requisitions than in a job order cost system**. **The materials are used for processes rather than for specific jobs** and therefore typically are for larger quantities.

At the beginning of the first process, a company usually adds most of the materials needed for production. However, other materials may be added at various points. For example, in the manufacture of **Hershey** candy bars, the chocolate and other ingredients are added at the

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beginning of the first process, and the wrappers and cartons are added at the end of the packaging process. Tyler Company adds materials at the beginning of each process. Suppose at the beginning of the current period that Tyler adds $50,000 of direct materials to the machining process and $20,000 of direct materials to the assembly process. Tyler makes the following entry to record the materials used.

| | | |
|---|---|---|
| Work in Process—Machining | 50,000 | |
| Work in Process—Assembly | 20,000 | |
| Raw Materials Inventory | | 70,000 |
| (To record materials used) | | |

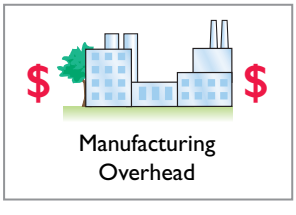
## Factory Labor Costs

In a process cost system, as in a job order cost system, companies may use time tickets to determine the cost of labor assignable to production departments. Since they assign labor costs to a process rather than a job, they can obtain, from the payroll register or departmental payroll summaries, the labor cost chargeable to a process.

Suppose that Tyler Company incurs factory labor charges of $20,000 in the machining process and $13,000 in the assembly process. The entry to assign labor costs to machining and assembly for Tyler is:

| | | |
|---|---|---|
| Work in Process—Machining | 20,000 | |
| Work in Process—Assembly | 13,000 | |
| Factory Labor | | 33,000 |
| (To assign factory labor to production) | | |

## Manufacturing Overhead Costs




The objective in assigning overhead in a process cost system is to allocate the overhead costs to the production departments on an objective and equitable basis. That basis is the activity that "drives" or causes the costs. A primary driver of overhead costs in continuous manufacturing operations is **machine time used**, not direct labor. Thus, companies **widely use machine hours** in allocating manufacturing overhead costs using predetermined overhead rates. Assume that based on machine hours that Tyler Company allocates overhead of $45,000 to the machining process and $17,000 to the assembly process. Tyler's entry to allocate overhead to the two processes is:

| | | |
|---|---|---|
| Work in Process—Machining | 45,000 | |
| Work in Process—Assembly | 17,000 | |
| Manufacturing Overhead | | 62,000 |
| (To assign overhead to production) | | |

### Management Insight Caterpillar

© SweetyMommy/iStockphoto

#### Choosing a Cost Driver

In one of its automated cost centers, **Caterpillar** inputs work into the cost center, where robotic machines process it and transfer the finished job to the next cost center without human intervention. One person tends all of the machines and spends more time maintaining machines than operating them. In such cases, overhead rates based on direct labor hours may be misleading. Surprisingly, some companies continue to assign manufacturing overhead on the basis of direct labor despite the fact that there is no cause-and-effect relationship between labor and overhead.

**What is the result if a company uses the wrong "cost driver" to assign manufacturing overhead? (Go to WileyPLUS for this answer and additional questions.)**

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## Transfer to Next Department

At the end of the month, Tyler Company needs an entry to record the cost of the goods transferred out of the Machining Department. In this case, the transfer is to the Assembly Department. Suppose Tyler transferred goods with a recorded cost of $87,000 from machining to assembly. Tyler makes the following entry.

| | | |
|---|---|---|
| Work in Process—Assembly | 87,000 | |
| Work in Process—Machining | | 87,000 |
| (To record transfer of units to the Assembly Department) | | |

## Transfer to Finished Goods

Suppose the Assembly Department completes units with a recorded cost of $114,000 and then transfers them to the finished goods warehouse. The entry for this transfer is as follows.

| | | |
|---|---|---|
| Finished Goods Inventory | 114,000 | |
| Work in Process—Assembly | | 114,000 |
| (To record transfer of units to finished goods) | | |

## Transfer to Cost of Goods Sold

Suppose Tyler Company sells finished good with a recorded cost of $27,000. It records the cost of goods sold as follows.

| | | |
|---|---|---|
| Cost of Goods Sold | 27,000 | |
| Finished Goods Inventory | | 27,000 |
| (To record cost of units sold) | | |

## DO IT! 2 | Manufacturing Costs in Process Costing

Ruth Company manufactures ZEBO through two processes: blending and bottling. In June, raw materials used were Blending $18,000 and Bottling $4,000. Factory labor costs were Blending $12,000 and Bottling $5,000. Manufacturing overhead costs assigned were Blending $6,000 and Bottling $2,500. The company transfers units completed at a cost of $19,000 in the Blending Department to the Bottling Department. The Bottling Department transfers units completed at a cost of $11,000 to Finished Goods. Journalize the assignment of these costs to the two processes and the transfer of units as appropriate.

**ACTION PLAN**

- In process cost accounting, keep separate work in process accounts for each process.
- When the costs are assigned to production, debit the separate work in process accounts.
- Transfer cost of completed units to the next process or to Finished Goods.

### Solution

The entries are:

| | | |
|---|---|---|
| Work in Process—Blending | 18,000 | |
| Work in Process—Bottling | 4,000 | |
| Raw Materials Inventory | | 22,000 |
| (To record materials used) | | |
| Work in Process—Blending | 12,000 | |
| Work in Process—Bottling | 5,000 | |
| Factory Labor | | 17,000 |
| (To assign factory labor to production) | | |
| Work in Process—Blending | 6,000 | |
| Work in Process—Bottling | 2,500 | |
| Manufacturing Overhead | | 8,500 |
| (To assign overhead to production) | | |
| Work in Process—Bottling | 19,000 | |
| Work in Process—Blending | | 19,000 |
| (To record transfer of units to the Bottling Department) | | |

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| | | | |
|---|---|---|---|
| Finished Goods Inventory | | 11,000 | |
| Work in Process—Bottling | | | 11,000 |
| (To record transfer of units to finished goods) | | | |

Related exercise material: **BE21.1, BE21.2, BE21.3, DO IT! 21.2, E21.2, and E21.4.**

# Equivalent Units

**LEARNING OBJECTIVE 3**

Compute equivalent units.

Suppose you have a work-study job in the office of your college's president, and she asks you to compute the cost of instruction per full-time equivalent student at your college. The college's vice president for finance provides the information shown in **Illustration 21.6**.

| | |
|---|---|
| Costs: | |
| Total cost of instruction | $9,000,000 |
| Student population: | |
| Full-time students | 900 |
| Part-time students | 1,000 |

**ILLUSTRATION 21.6**
**Information for full-time student example**

Part-time students take 60% of the classes of a full-time student during the year. **Illustration 21.7** shows how to compute the number of full-time equivalent students per year.

| Full-Time Students | + | Equivalent Units of Part-Time Students | = | Full-Time Equivalent Students |
|---|---|---|---|---|
| 900 | + | (1,000 × 60%) | = | 1,500 |

**ILLUSTRATION 21.7**
**Full-time equivalent unit computation**

The cost of instruction per full-time equivalent student is therefore the total cost of instruction ($9,000,000) divided by the number of full-time equivalent students (1,500), which is $6,000 ($9,000,000 ÷ 1,500).

A process cost system uses the same idea, called equivalent units of production. **Equivalent units of production** measure the work done during the period, expressed in fully completed units. Companies use this measure to determine the cost per unit of completed product.

## Weighted-Average Method

The formula to compute equivalent units of production is shown in **Illustration 21.8**.

| Units Completed and Transferred out | + | Equivalent Units of Ending Work in Process | = | Equivalent Units of Production |
|---|---|---|---|---|

**ILLUSTRATION 21.8**
**Equivalent units of production formula**

To better understand this concept of equivalent units, consider the following two separate examples.

**Example 1.** In a specific period, the entire output of Sullivan Company's Blending Department consists of ending work in process of 4,000 units which are 60% complete

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as to materials, labor, and overhead. The equivalent units of production for the Blending Department are therefore 2,400 units (4,000 × 60%).

**Example 2.** The output of Kori Company's Packaging Department during the period consists of 10,000 units completed and transferred out, and 5,000 units in ending work in process which are 70% completed. The equivalent units of production are therefore 13,500 [10,000 + (5,000 × 70%)].

This method of computing equivalent units is referred to as the **weighted-average method**. It considers the degree of completion (weighting) of the units completed and transferred out and the ending work in process.

## Refinements on the Weighted-Average Method

**Kellogg Company** has produced Eggo® Waffles since 1970. Three departments produce these waffles: Mixing, Baking, and Freezing/Packaging. The Mixing Department combines dry ingredients, including flour, salt, and baking powder, with liquid ingredients, including eggs and vegetable oil, to make waffle batter. **Illustration 21.9** provides information related to the Mixing Department at the end of June. Note that separate unit cost computations are needed for materials and conversion costs whenever the two types of costs do not occur in the process at the same time.

**ILLUSTRATION 21.9**
**Information for Mixing Department**

**Mixing Department**

| | | Percentage Complete | |
|---|---|---|---|
| | Physical Units | Materials | Conversion Costs |
| Work in process, June 1 | 100,000 | 100% | 70% |
| Started into production | 800,000 | | |
| Total units to be accounted for | 900,000 | | |
| Units transferred out | 700,000 | | |
| Work in process, June 30 | 200,000 | 100% | 60% |
| Total units accounted for | 900,000 | | |

**ETHICS NOTE**

An unethical manager might use incorrect completion percentages when determining equivalent units. This results in either raising or lowering costs. Since completion percentages are somewhat subjective, this form of income manipulation can be difficult to detect.

Illustration 21.9 indicates that the beginning work in process is 100% complete as to materials cost and 70% complete as to conversion costs (see **Ethics Note**). **Conversion costs are the sum of labor costs and overhead costs.** In other words, Kellogg adds both the dry and liquid ingredients (materials) at the beginning of the waffle-making process, and the conversion costs (labor and overhead) related to the mixing of these ingredients are incurred uniformly and are 70% complete. The ending work in process is 100% complete as to materials cost and 60% complete as to conversion costs.

We then use the Mixing Department information to determine equivalent units. **In computing equivalent units, the beginning work in process is not part of the equivalent-units-of-production formula.** The units transferred out to the Baking Department are fully complete as to both materials and conversion costs. The ending work in process is fully complete as to materials, but only 60% complete as to conversion costs. We therefore need to make **two equivalent unit computations**: one for materials, and the other for conversion costs. **Illustration 21.10** shows these computations.

**ILLUSTRATION 21.10**
**Computation of equivalent units—Mixing Department**

**Mixing Department**

| | Equivalent Units | |
|---|---|---|
| | Materials | Conversion Costs |
| Units transferred out | 700,000 | 700,000 |
| Work in process, June 30 | | |
| 200,000 × 100% | 200,000 | |
| 200,000 × 60% | | 120,000 |
| Total equivalent units | 900,000 | 820,000 |

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We can refine the earlier formula used to compute equivalent units of production (Illustration 21.8) to show the computations for materials and for conversion costs, as shown in **Illustration 21.11**.

| | | | | |
|---|---|---|---|---|
| Units Completed and Transferred Out—Materials | + | Equivalent Units of Ending Work in Process—Materials | = | Equivalent Units of Production—Materials |
| Units Completed and Transferred Out—Conversion Costs | + | Equivalent Units of Ending Work in Process—Conversion Costs | = | Equivalent Units of Production—Conversion Costs |

**ILLUSTRATION 21.11**
**Refined equivalent units of production formula**

## People, Planet, and Profit Insight — General Electric

© Nicole Hofmann/iStockphoto

### Haven't I Seen That Before?

For a variety of reasons, many companies, including **General Electric**, are making a big push to remanufacture goods that have been thrown away. Items getting a second chance include cell phones, computers, home appliances, car parts, vacuum cleaners, and medical equipment. Businesses have figured out that profit margins on remanufactured goods are significantly higher than on new goods. As commodity prices such as copper and steel increase, reusing parts makes more sense. Also, as more local governments initiate laws requiring that electronics and appliances be recycled rather than thrown away, the cost of remanufacturing declines because the gathering of used goods becomes far more efficient. Besides benefitting the manufacturer, remanufacturing provides goods at a much lower price to consumers, reduces waste going to landfills, saves energy, reuses scarce resources, and reduces emissions. For example, it was estimated that a remanufactured car starter results in about 50% less carbon dioxide emissions than making a new one.

**Source:** James R. Hagerty and Paul Glader, "From Trash Heap to Store Shelf," *Wall Street Journal Online* (January 24, 2011).

**In what ways might the relative composition (materials, labor, and overhead) of a remanufactured product's cost differ from that of a newly made product? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 3 | Equivalent Units

The Fabricating Department for Outdoor Essentials has the following production and cost data for the current month.

| Beginning Work in Process | Units Transferred Out | Ending Work in Process |
|---|---|---|
| –0– | 15,000 | 10,000 |

Materials are entered at the beginning of the process. The ending work in process units are 30% complete as to conversion costs. Compute the equivalent units of production for (a) materials and (b) conversion costs.

**ACTION PLAN**

- To measure the work done during the period, expressed in fully completed units, compute equivalent units of production.
- Use the appropriate formula: Units completed and transferred out + Equivalent units of ending work in process = Equivalent units of production.

### Solution

**a.** Since materials are entered at the beginning of the process, the equivalent units of ending work in process are 10,000. Thus, 15,000 units + 10,000 units = 25,000 equivalent units of production for materials.

**b.** Since ending work in process is only 30% complete as to conversion costs, the equivalent units of ending work in process are 3,000 (10,000 units × 30%). Thus, 15,000 units + 3,000 units = 18,000 equivalent units of production for conversion costs.

Related exercise material: **BE21.4, BE21.5, DO IT! 21.3, E21.5, E21.6, E21.8, E21.9, E21.10, E21.11, E21.13, E21.14, and E21.15.**

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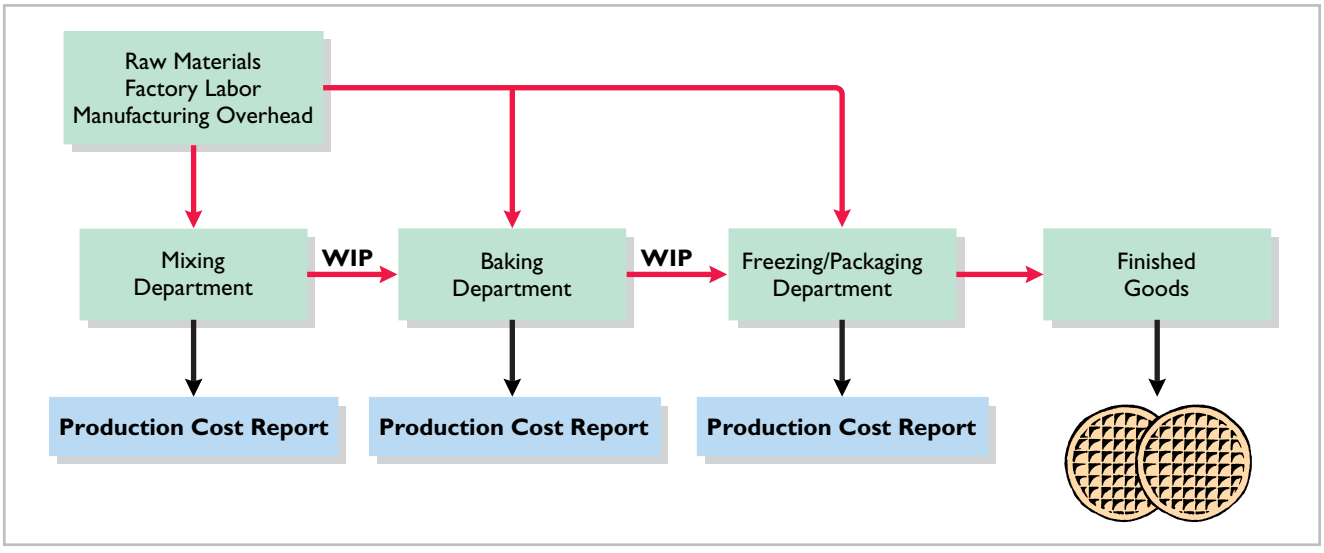
# The Production Cost Report

**LEARNING OBJECTIVE 4**

Complete the four steps to prepare a production cost report.

As mentioned earlier, companies prepare a production cost report for each department. A **production cost report** is the key document that management uses to understand the activities in a department; it shows the production quantity and cost data related to that department. For example, in producing Eggo® Waffles, **Kellogg Company** uses three production cost reports: Mixing, Baking, and Freezing/Packaging. **Illustration 21.12** shows the flow of costs to make an Eggo® Waffle and the related production cost reports for each department.

**ILLUSTRATION 21.12** **Flow of costs in making Eggo® Waffles**




In order to complete a production cost report, the company must perform four steps, which as a whole make up the process cost system.

1. Compute the physical unit flow.
2. Compute the equivalent units of production.
3. Compute unit production costs.
4. Prepare a cost reconciliation schedule.

**Illustration 21.13** shows assumed data for the Mixing Department at **Kellogg Company** for the month of June. We will use this information to complete a production cost report for the Mixing Department.

**ILLUSTRATION 21.13**
**Unit and cost data—Mixing Department**

| Mixing Department | |
|---|---|
| **Units** | |
| Work in process, June 1 | 100,000 |
| Direct materials: 100% complete | |
| Conversion costs: 70% complete | |
| Units started into production during June | 800,000 |
| Units completed and transferred out to Baking Department | 700,000 |
| Work in process, June 30 | 200,000 |
| Direct materials: 100% complete | |
| Conversion costs: 60% complete | |

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| Costs | |
|---|---|
| Work in process, June 1 | |
| Direct materials: 100% complete | $ 50,000 |
| Conversion costs: 70% complete | 35,000 |
| Cost of work in process, June 1 | $ 85,000 |
| Costs incurred during production in June | |
| Direct materials | $400,000 |
| Conversion costs | 170,000 |
| Costs incurred in June | $570,000 |

**ILLUSTRATION 21.13**
(*continued*)

## Compute the Physical Unit Flow (Step 1)

**Physical units** are the actual units to be accounted for during a period, irrespective of any work performed. To keep track of these units, add the units started (or transferred) into production during the period to the units in process at the beginning of the period. This amount is referred to as the **total units to be accounted for**.

The total units then are accounted for by the output of the period. The output consists of units transferred out during the period and any units in process at the end of the period. This amount is referred to as the **total units accounted for**. **Illustration 21.14** shows the flow of physical units for Kellogg's Mixing Department for the month of June.

**Mixing Department**

| | Physical Units |
|---|---|
| Units to be accounted for | |
| Work in process, June 1 | 100,000 |
| Started (transferred) into production | 800,000 |
| Total units | 900,000 |
| Units accounted for | |
| Completed and transferred out | 700,000 |
| Work in process, June 30 | 200,000 |
| Total units | 900,000 |

**ILLUSTRATION 21.14**
**Physical unit flow—Mixing Department**

The records indicate that the Mixing Department must account for 900,000 units. Of this sum, 700,000 units were transferred to the Baking Department and 200,000 units were still in process.

## Compute the Equivalent Units of Production (Step 2)

Once the physical flow of the units is established, Kellogg must measure the Mixing Department's productivity in terms of equivalent units of production. The Mixing Department adds materials at the beginning of the process, and it incurs conversion costs uniformly during the process (see **Helpful Hint**). Thus, we need two computations of equivalent units: one for materials and one for conversion costs. The equivalent unit computation is shown in **Illustration 21.15**. Recall that this computation ignores beginning work in process.

**HELPFUL HINT**
Materials are not always added at the beginning of the process. For example, materials are sometimes added uniformly during the process.

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**ILLUSTRATION 21.15**
**Computation of equivalent units—Mixing Department**

| | Equivalent Units | |
|---|---|---|
| | Materials | Conversion Costs |
| Units transferred out | 700,000 | 700,000 |
| Work in process, June 30 | | |
| 200,000 × 100% | 200,000 | |
| 200,000 × 60% | | 120,000 |
| Total equivalent units | **900,000** | **820,000** |

## Compute Unit Production Costs (Step 3)

Armed with the knowledge of the equivalent units of production, we can now compute the unit production costs. **Unit production costs** are costs expressed in terms of equivalent units of production. When equivalent units of production are different for materials and conversion costs, we compute three unit costs: (1) materials, (2) conversion, and (3) total manufacturing.

The computation of total materials cost related to Eggo® Waffles is shown in Illustration 21.16.

**ILLUSTRATION 21.16**
**Total materials cost computation**

| | |
|---|---|
| Work in process, June 1 | |
| Direct materials cost | $ 50,000 |
| Costs added to production during June | |
| Direct materials cost | 400,000 |
| Total materials cost | **$450,000** |

Illustration 21.17 shows the computation of unit materials cost.

**ILLUSTRATION 21.17**
**Unit materials cost computation**

| Total Materials Cost | ÷ | Equivalent Units of Materials | = | Unit Materials Cost |
|---|---|---|---|---|
| $450,000 | ÷ | 900,000 | = | $0.50 |

Illustration 21.18 shows the computation of total conversion costs.

**ILLUSTRATION 21.18**
**Total conversion costs computation**

| | |
|---|---|
| Work in process, June 1 | |
| Conversion costs | $ 35,000 |
| Costs added to production during June | |
| Conversion costs | 170,000 |
| Total conversion costs | **$205,000** |

The computation of unit conversion cost is shown in Illustration 21.19.

**ILLUSTRATION 21.19**
**Unit conversion cost computation**

| Total Conversion Costs | ÷ | Equivalent Units of Conversion Costs | = | Unit Conversion Cost |
|---|---|---|---|---|
| $205,000 | ÷ | 820,000 | = | $0.25 |

Total manufacturing cost per unit is therefore computed as shown in Illustration 21.20.

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| Unit Materials Cost | + | Unit Conversion Cost | = | Total Manufacturing Cost per Unit |
|---|---|---|---|---|
| $0.50 | + | $0.25 | = | $0.75 |

**ILLUSTRATION 21.20**
**Total manufacturing cost per unit**

## Prepare a Cost Reconciliation Schedule (Step 4)

We are now ready to determine the cost of goods transferred out of the Mixing Department to the Baking Department and the costs in ending work in process. Kellogg charged total costs of $655,000 to the Mixing Department in June, calculated as shown in Illustration 21.21.

| | |
|---|---|
| Costs to be accounted for | |
| Work in process, June 1 | $ 85,000 |
| Started into production | 570,000 |
| Total costs | **$655,000** |

**ILLUSTRATION 21.21**
**Costs charged to Mixing Department**

The company then prepares a cost reconciliation schedule (see Illustration 21.22) to assign these costs to (a) units transferred out to the Baking Department and (b) ending work in process.

**Mixing Department**
**Cost Reconciliation Schedule**

| | | |
|---|---|---|
| Costs accounted for | | |
| Transferred out (700,000 × $0.75) | | $525,000 |
| Work in process, June 30 | | |
| Materials (200,000 × $0.50) | $100,000 | |
| Conversion costs (120,000 × $0.25) | 30,000 | 130,000 |
| Total costs | | **$655,000** |

**ILLUSTRATION 21.22**
**Cost reconciliation schedule—Mixing Department**

Kellogg uses the total manufacturing cost per unit, $0.75, in costing the **units completed** and transferred to the Baking Department. In contrast, the unit cost of materials and the unit cost of conversion are needed in costing **units in process**. The **cost reconciliation schedule** shows that the **total costs accounted for** (Illustration 21.22) equal the **total costs to be accounted for** (Illustration 21.21).

## Preparing the Production Cost Report

At this point, Kellogg is ready to prepare the production cost report for the Mixing Department. As indicated earlier, this report is an internal document for management that shows production quantity and cost data for a production department. Illustration 21.23 shows the completed production cost report for the Mixing Department and identifies the four steps used in preparing it (see Helpful Hint).

Production cost reports provide a basis for evaluating the productivity of a department. In addition, managers can use the cost data to assess whether unit costs and total costs are reasonable. By comparing the quantity and cost data with predetermined goals, top management can also judge whether current performance is meeting planned objectives.

**HELPFUL HINT**

**The four steps in preparing a production cost report:**
1. **Compute the physical unit flow.**
2. **Compute the equivalent units of production.**
3. **Compute unit production costs.**
4. **Prepare a cost reconciliation schedule.**

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**ILLUSTRATION 21.23** **Production cost report**

Mixing Department

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | **Mixing Department** | | | | |
| 2 | **Production Cost Report** | | | | |
| 3 | **For the Month Ended June 30, 2020** | | | | |
| 4 | | | **Equivalent Units** | | |
| 5 | | Physical Units | Materials | Conversion Costs | |
| 6 | **Quantities** | | | | |
| 7 | Units to be accounted for | **Step 1** | | **Step 2** | |
| 8 | Work in process, June 1 | 100,000 | | | |
| 9 | Started into production | 800,000 | | | |
| 10 | Total units | 900,000 | | | |
| 11 | Units accounted for | | | | |
| 12 | Transferred out | 700,000 | 700,000 | 700,000 | |
| 13 | Work in process, June 30 | 200,000 | 200,000 | 120,000 | (200,000 × 60%) |
| 14 | Total units | 900,000 | 900,000 | 820,000 | |
| 15 | **Costs** | | | | |
| 16 | Unit costs **Step 3** | | Materials | Conversion Costs | Total |
| 17 | Total cost | (a) | $450,000 | $205,000 | $655,000 |
| 18 | Equivalent units | (b) | 900,000 | 820,000 | |
| 19 | Unit costs [(a) ÷ (b)] | | $0.50 | $0.25 | $0.75 |
| 20 | Costs to be accounted for | | | | |
| 21 | Work in process, June 1 | | | | $ 85,000 |
| 22 | Started into production | | | | 570,000 |
| 23 | Total costs | | | | $655,000 |
| 24 | **Cost Reconciliation Schedule** **Step 4** | | | | |
| 25 | Costs accounted for | | | | |
| 26 | Transferred out (700,000 × $0.75) | | | | $525,000 |
| 27 | Work in process, June 30 | | | | |
| 28 | Materials (200,000 × $0.50) | | | $100,000 | |
| 29 | Conversion costs (120,000 × $0.25) | | | 30,000 | 130,000 |
| 30 | Total costs | | | | $655,000 |
| 31 | | | | | |

## Costing Systems—Final Comments

Companies often use a combination of a process cost and a job order cost system. Called **operations costing**, this hybrid system is similar to process costing in its assumption that standardized methods are used to manufacture the product. At the same time, the product may have some customized, individual features that require the use of a job order cost system.

Consider, for example, **Ford Motor Company**. Each vehicle at a given plant goes through the same assembly line, but Ford uses different materials (such as seat coverings, paint, and tinted glass) for different vehicles. Similarly, **Kellogg**'s Pop-Tarts® toaster pastries go through numerous standardized processes—mixing, filling, baking, frosting, and packaging. The pastry dough, though, comes in different flavors—plain, chocolate, and graham—and fillings include Smucker's® real fruit, chocolate fudge, vanilla creme, brown sugar cinnamon, and s'mores.

A cost-benefit trade-off occurs as a company decides which costing system to use. A job order cost system, for example, provides detailed information related to the cost of the product. Because each job has its own distinguishing characteristics, the system can provide an accurate cost per job. This information is useful in controlling costs and pricing products. However, the cost of implementing a job order cost system is often expensive because of the accounting costs involved.

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On the other hand, for a company like **Intel**, is there a benefit in knowing whether the cost of the one-hundredth computer chip produced is different from the one-thousandth chip produced? Probably not. An average cost of the product will suffice for control and pricing purposes.

In summary, when deciding to use one of these systems or a combination system, a company must weigh the costs of implementing the system against the benefits from the additional information provided.

### DO IT! 4 | Cost Reconciliation Schedule

In March, Rodayo Manufacturing had the following unit production costs: materials $6 and conversion costs $9. On March 1, it had no work in process. During March, Rodayo transferred out 12,000 units. As of March 31, 800 units that were 25% complete as to conversion costs and 100% complete as to materials were in ending work in process. Assign the costs to the units transferred out and in process.

**ACTION PLAN**

- Assign the total manufacturing cost of $15 per unit to the 12,000 units transferred out.
- Assign the materials cost and conversion costs based on equivalent units of production to units in ending work in process.

**Solution**

The assignment of costs is as follows.

| | | |
|---|---|---|
| Costs accounted for | | |
| Transferred out (12,000 × $15) | | $180,000 |
| Work in process, March 31 | | |
| Materials (800 × $6) | $4,800 | |
| Conversion costs (200* × $9) | 1,800 | 6,600 |
| Total costs | | $186,600 |

*800 × 25%

Related exercise material: **BE21.6, BE21.7, BE21.8, BE21.9, DO IT! 21.4, E21.3, E21.5, E21.6, E21.7, E21.8, E21.9, E21.10, E21.11, E21.13, E21.14, and E21.15.**

## Appendix 21A FIFO Method for Equivalent Units

**LEARNING OBJECTIVE *5**

Compute equivalent units using the FIFO method.

In this chapter, we demonstrated the weighted-average method of computing equivalent units. Some companies use a different method, referred to as the **first-in, first-out (FIFO) method**, to compute equivalent units. The purpose of this appendix is to illustrate how companies use the FIFO method to prepare a production cost report.

### Equivalent Units Under FIFO

Under the FIFO method, companies compute equivalent units on a first-in, first-out basis. Some companies favor the FIFO method because the FIFO cost assumption usually corresponds to the actual physical flow of the goods. Under the FIFO method, companies therefore assume that the beginning work in process is completed before new work is started.

Using the FIFO method, equivalent units are the sum of the work performed to:

1. Finish the units of beginning work in process inventory.
2. Complete the units started into production during the period (referred to as the **units started and completed**).
3. Start, but only partially complete, the units in ending work in process inventory.

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Normally, in a process cost system, some units will always be in process at both the beginning and end of the period.

## Illustration

Illustration 21A.1 shows the physical flow of units for the Assembly Department of Shutters Inc. In addition, it indicates the degree of completion of the work in process accounts in regard to conversion costs.

**ILLUSTRATION 21A.1**
**Physical unit flow—Assembly Department**

**Assembly Department**

| | Physical Units |
|---|---|
| Units to be accounted for | |
| Work in process, June 1 (40% complete) | 500 |
| Started (transferred) into production | 8,000 |
| Total units | **8,500** |
| Units accounted for | |
| Completed and transferred out | 8,100 |
| Work in process, June 30 (75% complete) | 400 |
| Total units | **8,500** |

In Illustration 21A.1, the units completed and transferred out (8,100) plus the units in ending work in process (400) equal the total units to be accounted for (8,500). Using FIFO, we then compute equivalent units for conversion costs as follows.

1. The 500 units of beginning work in process were 40% complete. Thus, 300 equivalent units (500 units × 60%) were required to complete the beginning inventory.
2. The units started and completed during the current month are **the units transferred out minus the units in beginning work in process**. For the Assembly Department, units started and completed are 7,600 (8,100 − 500).
3. The 400 units of ending work in process were 75% complete. Thus, equivalent units were 300 (400 × 75%).

Equivalent units for conversion costs for the Assembly Department are 8,200, computed as shown in Illustration 21A.2.

**ILLUSTRATION 21A.2**
**Computation of equivalent units—FIFO method**

**Assembly Department**

| Production Data | Work Added Physical Units | Equivalent This Period | Units |
|---|---|---|---|
| Work in process, June 1 | 500 | 60% | **300** |
| Started and completed | 7,600 | 100% | **7,600** |
| Work in process, June 30 | 400 | 75% | **300** |
| Total | 8,500 | | **8,200** |

# Comprehensive Example

To provide a complete illustration of the FIFO method, we will use the data for the Mixing Department at **Kellogg Company** for the month of June, as shown in Illustration 21A.3.

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**ILLUSTRATION 21A.3**
**Unit and cost data—Mixing Department**

| Mixing Department | |
|---|---|
| **Units** | |
| Work in process, June 1 | 100,000 |
| Direct materials: 100% complete | |
| Conversion costs: 70% complete | |
| Units started into production during June | 800,000 |
| Units completed and transferred out to Baking Department | 700,000 |
| Work in process, June 30 | 200,000 |
| Direct materials: 100% complete | |
| Conversion costs: 60% complete | |
| **Costs** | |
| Work in process, June 1 | |
| Direct materials: 100% complete | $ 50,000 |
| Conversion costs: 70% complete | 35,000 |
| Cost of work in process, June 1 | $ 85,000 |
| Costs incurred during production in June | |
| Direct materials | $400,000 |
| Conversion costs | 170,000 |
| Costs incurred in June | $570,000 |

## Compute the Physical Unit Flow (Step 1)

**Illustration 21A.4** shows the physical flow of units for Kellogg's Mixing Department for the month of June.

**ILLUSTRATION 21A.4**
**Physical unit flow—Mixing Department**

| Mixing Department | Physical Units |
|---|---|
| Units to be accounted for | |
| Work in process, June 1 | 100,000 |
| Started (transferred) into production | 800,000 |
| Total units | **900,000** |
| Units accounted for | |
| Completed and transferred out | 700,000 |
| Work in process, June 30 | 200,000 |
| Total units | **900,000** |

Under the FIFO method, companies often expand the physical units schedule, as shown in **Illustration 21A.5**, to explain the transferred-out section. As a result, this section reports the beginning work in process and the units started and completed. These two items further explain the completed and transferred-out section.

**ILLUSTRATION 21A.5**
**Physical unit flow (FIFO)—Mixing Department**

| Mixing Department | Physical Units |
|---|---|
| Units to be accounted for | |
| Work in process, June 1 | 100,000 |
| Started (transferred) into production | 800,000 |
| Total units | **900,000** |
| Units accounted for | |
| Completed and transferred out | |
| **Work in process, June 1** | **100,000** |
| **Started and completed** | **600,000** |
| | **700,000** |
| Work in process, June 30 | 200,000 |
| Total units | **900,000** |

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The records indicate that the Mixing Department must account for 900,000 units. Of this sum, 700,000 units were transferred to the Baking Department and 200,000 units were still in process.

## Compute Equivalent Units of Production (Step 2)

**HELPFUL HINT**

**As noted earlier, materials are not always added at the beginning of the process. For example, companies sometimes add materials uniformly during the process.**

As with the method presented in the chapter, once they determine the physical flow of the units, companies need to determine equivalent units of production. The Mixing Department adds materials at the beginning of the process, and it incurs conversion costs uniformly during the process (see **Helpful Hint**). Thus, Kellogg must make two computations of equivalent units: one for materials and one for conversion costs.

**Equivalent Units for Materials.** Since Kellogg adds materials at the beginning of the process, no additional materials costs are required to complete the beginning work in process. In addition, 100% of the materials costs has been incurred on the ending work in process. **Illustration 21A.6** shows the computation of equivalent units for materials.

**ILLUSTRATION 21A.6**
**Computation of equivalent units—materials**

**Mixing Department—Materials**

| Production Data | Physical Units | Materials Added This Period | Equivalent Units |
|---|---|---|---|
| Work in process, June 1 | 100,000 | –0– | **–0–** |
| Started and finished | 600,000 | 100% | **600,000** |
| Work in process, June 30 | 200,000 | 100% | **200,000** |
| Total | 900,000 | | **800,000** |

**Equivalent Units for Conversion Costs.** The 100,000 units of beginning work in process were 70% complete in terms of conversion costs. Thus, the Mixing Department required 30,000 equivalent units (100,000 units × 30%) of conversion costs to complete the beginning inventory. In addition, the 200,000 units of ending work in process were 60% complete in terms of conversion costs. Thus, the equivalent units for conversion costs is 750,000, computed as shown in **Illustration 21A.7**.

**ILLUSTRATION 21A.7**
**Computation of equivalent units—conversion costs**

**Mixing Department—Conversion Costs**

| Production Data | Physical Units | Work Added This Period | Equivalent Units |
|---|---|---|---|
| Work in process, June 1 | 100,000 | 30% | **30,000** |
| Started and finished | 600,000 | 100% | **600,000** |
| Work in process, June 30 | 200,000 | 60% | **120,000** |
| Total | 900,000 | | **750,000** |

## Compute Unit Production Costs (Step 3)

Armed with the knowledge of the equivalent units of production, Kellogg can now compute the unit production costs. Unit production costs are costs expressed in terms of equivalent units of production. When equivalent units of production are different for materials and conversion costs, companies compute three unit costs: (1) materials, (2) conversion, and (3) total manufacturing.

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Under the FIFO method, the unit costs of production are based entirely on the production costs incurred during the month. Thus, the costs in the beginning work in process are not relevant, because they were incurred on work done in the preceding month. As Illustration 21A.3 indicated, the costs incurred during production in June were as shown in **Illustration 21A.8.**

**ILLUSTRATION 21A.8**
**Costs incurred during production in June**

| | |
|---|---|
| Direct materials | $400,000 |
| Conversion costs | 170,000 |
| Total costs | $570,000 |

**Illustration 21A.9** shows the computation of unit materials cost, unit conversion costs, and total unit cost related to Eggo® Waffles.

**ILLUSTRATION 21A.9**
**Unit cost formulas and computations—Mixing Department**

| | | | | | |
|---|---|---|---|---|---|
| **(1)** | **Total Materials Cost** | ÷ | **Equivalent Units of Materials** | = | **Unit Materials Cost** |
| | $400,000 | ÷ | 800,000 | = | $0.50 |
| **(2)** | **Total Conversion Costs** | ÷ | **Equivalent Units of Conversion Costs** | = | **Unit Conversion Cost** |
| | $170,000 | ÷ | 750,000 | = | $0.227 (rounded)* |
| **(3)** | **Unit Materials Cost** | + | **Unit Conversion Cost** | = | **Total Manufacturing Cost per Unit** |
| | $0.50 | + | $0.227 | = | $0.727 |

**For homework problems, round unit costs to three decimal places.*

As shown, the unit costs are $0.50 for materials, $0.227 for conversion costs, and $0.727 for total manufacturing costs.

## Prepare a Cost Reconciliation Schedule (Step 4)

Kellogg is now ready to determine the cost of goods transferred out of the Mixing Department to the Baking Department and the costs in ending work in process. The total costs charged to the Mixing Department in June are $655,000, calculated as shown in **Illustration 21A.10** (see Illustration 21A.3 for further detail).

**ILLUSTRATION 21A.10**
**Costs charged to Mixing Department**

| | |
|---|---|
| Costs to be accounted for | |
| Work in process, June 1 | $ 85,000 |
| Started into production | 570,000 |
| Total costs | $655,000 |

Kellogg next prepares a cost reconciliation schedule to assign these costs to (1) units transferred out to the Baking Department and (2) ending work in process. Under the FIFO method, the first goods to be completed during the period are the units in beginning work in process. Thus, the cost of the beginning work in process is always assigned to the goods transferred to the next department (or finished goods, if processing is complete). Under the FIFO method, ending work in process also will be assigned only the production costs incurred in the current period. **Illustration 21A.11** shows a cost reconciliation schedule for the Mixing Department.

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**ILLUSTRATION 21A.11**
**Cost reconciliation report**

**Mixing Department**
**Cost Reconciliation Schedule**

| | | |
|---|---|---|
| Costs accounted for | | |
| Transferred out | | |
| Work in process, June 1 | | $ 85,000 |
| Costs to complete beginning work in process | | |
| Conversion costs (30,000 × $0.227) | | 6,810 |
| Total costs | | 91,810 |
| Units started and completed (600,000 × $0.727) | | 435,950* |
| Total costs transferred out | | 527,760 |
| Work in process, June 30 | | |
| Materials (200,000 × $0.50) | $100,000 | |
| Conversion costs (120,000 × $0.227) | 27,240 | 127,240 |
| Total costs | | **$655,000** |

*Any rounding errors should be adjusted in the "Units started and completed'' calculation.

As you can see, the total costs accounted for ($655,000 from Illustration 21A.11) equal the total costs to be accounted for ($655,000 from Illustration 21A.10).

### Preparing the Production Cost Report

At this point, Kellogg is ready to prepare the production cost report for the Mixing Department. This report is an internal document for management that shows production quantity and cost data for a production department.

As discussed previously, there are four steps in preparing a production cost report:

1. Compute the physical unit flow.
2. Compute the equivalent units of production.
3. Compute unit production costs.
4. Prepare a cost reconciliation schedule.

**Illustration 21A.12** shows the production cost report for the Mixing Department, with the four steps identified in the report.

**HELPFUL HINT**
**The two self-checks in the report are (1) total physical units accounted for must equal the total units to be accounted for, and (2) total costs accounted for must equal the total costs to be accounted for.**

As indicated in the chapter, production cost reports provide a basis for evaluating the productivity of a department (see **Helpful Hint**). In addition, managers can use the cost data to assess whether unit costs and total costs are reasonable. By comparing the quantity and cost data with predetermined goals, top management can also judge whether current performance is meeting planned objectives.

## FIFO and Weighted-Average

The weighted-average method of computing equivalent units has **one major advantage**: It is simple to understand and apply. In cases where prices do not fluctuate significantly from period to period, the weighted-average method will be very similar to the FIFO method. In addition, companies that have been using just-in-time procedures effectively for inventory control purposes will have minimal inventory balances. Therefore, differences between the weighted-average and the FIFO methods will not be material.

Conceptually, the FIFO method is superior to the weighted-average method because it measures **current performance** using only costs incurred in the current period. Managers are, therefore, not held responsible for costs from prior periods over which they may not have had control. In addition, the FIFO method **provides current cost information**, which the

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company can use to establish **more accurate pricing strategies** for goods manufactured and sold in the current period.

**ILLUSTRATION 21A.12** **Production cost report—FIFO method**

Mixing Department

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| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | **Mixing Department** | | | | |
| 2 | **Production Cost Report** | | | | |
| 3 | **For the Month Ended June 30, 2020** | | | | |
| 4 | | | **Equivalent Units** | | |
| 5 | | Physical Units | Materials | Conversion Costs | |
| 6 | **Quantities** | | | | |
| 7 | Units to be accounted for | **Step 1** | | **Step 2** | |
| 8 | Work in process (WIP), June 1 | 100,000 | | | |
| 9 | Started into production | 800,000 | | | |
| 10 | Total units | 900,000 | | | |
| 11 | Units accounted for | | | | |
| 12 | Completed and transferred out | | | | |
| 13 | Work in process, June 1 | 100,000 | 0 | 30,000 | |
| 14 | Started and completed | 600,000 | 600,000 | 600,000 | |
| 15 | Work in process, June 30 | 200,000 | 200,000 | 120,000 | |
| 16 | Total units | 900,000 | 800,000 | 750,000 | |
| 17 | **Costs** | | | | |
| 18 | Unit costs **Step 3** | | Materials | Conversion Costs | Total |
| 19 | Costs in June (excluding beginning WIP) | (a) | $400,000 | $170,000 | $570,000 |
| 20 | Equivalent units | (b) | 800,000 | 750,000 | |
| 21 | Unit costs [(a) ÷ (b)] | | $0.50 | $0.227 | $0.727 |
| 22 | Costs to be accounted for | | | | |
| 23 | Work in process, June 1 | | | | $ 85,000 |
| 24 | Started into production | | | | 570,000 |
| 25 | Total costs | | | | $655,000 |
| 26 | **Cost Reconciliation Schedule** **Step 4** | | | | |
| 27 | Costs accounted for | | | | |
| 28 | Transferred out | | | | |
| 29 | Work in process, June 1 | | | $ 85,000 | |
| 30 | Costs to complete beginning work in process | | | | |
| 31 | Conversion costs (30,000 × $0.227) | | | 6,810 | $ 91,810 |
| 32 | Units started and completed (600,000 × $0.727)* | | | | 435,950 |
| 33 | Total costs transferred out | | | | 527,760 |
| 34 | Work in process, June 30 | | | | |
| 35 | Materials (200,000 × $0.50) | | | 100,000 | |
| 36 | Conversion costs (120,000 × $0.227) | | | 27,240 | 127,240 |
| 37 | Total costs | | | | $655,000 |
| 38 | *Any rounding errors should be adjusted in the "Units started and completed" | | | | |
| 39 | | | | | |

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# Review and Practice

## Learning Objectives Review

**1 Discuss the uses of a process cost system and how it compares to a job order system.**

Companies that mass-produce similar products in a continuous fashion use process cost systems. Once production begins, it continues until the finished product emerges. Each unit of finished product is indistinguishable from every other unit.

Job order cost systems are similar to process cost systems in three ways. (1) Both systems track the same cost elements—direct materials, direct labor, and manufacturing overhead. (2) Both accumulate costs in the same accounts—Raw Materials Inventory, Factory Labor, and Manufacturing Overhead. (3) Both assign accumulated costs to the same accounts—Work in Process, Finished Goods Inventory, and Cost of Goods Sold. However, the methods used to assign costs differ significantly.

There are four main differences between the two cost systems. (1) A process cost system uses separate Work in Process accounts for each department or manufacturing process, rather than only one work in process account used in a job order cost system. (2) A process cost system summarizes costs in a production cost report for each department. A job order cost system charges costs to individual jobs and summarizes them in a job cost sheet. (3) Costs are totaled at the end of a time period in a process cost system but at the completion of a job in a job order cost system. (4) A process cost system calculates unit cost as Total manufacturing costs for the period ÷ Units produced during the period. A job order cost system calculates unit cost as Total cost per job ÷ Units produced.

**2 Explain the flow of costs in a process cost system and the journal entries to assign manufacturing costs.**

A process cost system assigns manufacturing costs for raw materials, labor, and overhead to work in process accounts for various departments or manufacturing processes. It transfers the costs of partially completed units from one department to another as those units move through the manufacturing process. The system transfers the costs of completed work to Finished Goods Inventory. Finally, when inventory is sold, the system transfers the costs to Cost of Goods Sold.

Entries to assign the costs of raw materials, labor, and overhead consist of a credit to Raw Materials Inventory, Factory Labor, and Manufacturing Overhead, and a debit to Work in Process for each department. Entries to record the cost of goods transferred to another department are a credit to Work in Process for the department whose work is finished and a debit to Work in Process for the department to which the goods are transferred. The entry to record units completed and transferred to the warehouse is a credit to Work in Process for the department whose work is finished and a debit to Finished Goods Inventory. The entry to record the sale of goods is a credit to Finished Goods Inventory and a debit to Cost of Goods Sold.

**3 Compute equivalent units.**

Equivalent units of production measure work done during a period, expressed in fully completed units. Companies use this measure to determine the cost per unit of completed product. Equivalent units are the sum of units completed and transferred out plus equivalent units of ending work in process.

**4 Complete the four steps to prepare a production cost report.**

The four steps to complete a production cost report are as follows. (1) Compute the physical unit flow—that is, the total units to be accounted for. (2) Compute the equivalent units of production separately for direct materials and conversion costs. (3) Compute the unit production costs, expressed in terms of equivalent units of production. (4) Prepare a cost reconciliation schedule, which shows that the total costs accounted for equal the total costs to be accounted for.

The production cost report contains both quantity and cost data for a production department. There are four sections in the report: (1) number of physical units, (2) equivalent units determination, (3) unit costs, and (4) cost reconciliation schedule.

***5 Compute equivalent units using the FIFO method.**

Equivalent units under the FIFO method are the sum of the work performed to (1) finish the units of beginning work in process inventory, if any; (2) complete the units started into production during the period; and (3) start, but only partially complete, the units in ending work in process inventory.

## Glossary Review

**Conversion costs** The sum of labor costs and overhead costs. (p. 21-10).

**Cost reconciliation schedule** A schedule that shows that the total costs accounted for equal the total costs to be accounted for. (p. 21-15).

**Equivalent units of production** A measure of the work done during the period, expressed in fully completed units. (p. 21-9).

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**Operations costing** A combination of a process cost and a job order cost system in which products are manufactured primarily by standardized methods, with some customization. (p. 21-16).

**Physical units** Actual units to be accounted for during a period, irrespective of any work performed. (p. 21-13).

**Process cost system** An accounting system used to apply costs to similar products that are mass-produced in a continuous fashion. (p. 21-3).

**Production cost report** An internal report for management that shows both production quantity and cost data for a production department. (p. 21-12).

**Total units (costs) accounted for** The sum of the units (costs) transferred out during the period plus the units (costs) in process at the end of the period. (p. 21-13).

**Total units (costs) to be accounted for** The sum of the units (costs) started (or transferred) into production during the period plus the units (costs) in process at the beginning of the period. (p. 21-13).

**Unit production costs** Costs expressed in terms of equivalent units of production. (p. 21-14).

**Weighted-average method** Method of computing equivalent units of production which considers the degree of completion (weighting) of the units completed and transferred out and the ending work in process. (p. 21-10).

## Practice Multiple-Choice Questions

**1. (LO 1)** Which of the following items is not characteristic of a process cost system?

**a.** Once production begins, it continues until the finished product emerges.

**b.** The products produced are heterogeneous in nature.

**c.** The focus is on continually producing homogeneous products.

**d.** When the finished product emerges, all units have precisely the same amount of materials, labor, and overhead.

**2. (LO 1)** Indicate which of the following statements is **not** correct.

**a.** Both a job order and a process cost system track the same three manufacturing cost elements—direct materials, direct labor, and manufacturing overhead.

**b.** A job order cost system uses only one work in process account, whereas a process cost system uses multiple work in process accounts.

**c.** Manufacturing costs are accumulated the same way in a job order and in a process cost system.

**d.** Manufacturing costs are assigned the same way in a job order and in a process cost system.

**3. (LO 2)** In a process cost system, the flow of costs is:

**a.** work in process, cost of goods sold, finished goods.

**b.** finished goods, work in process, cost of goods sold.

**c.** finished goods, cost of goods sold, work in process.

**d.** work in process, finished goods, cost of goods sold.

**4. (LO 2)** In making journal entries to assign raw materials costs, a company using process costing:

**a.** debits Finished Goods Inventory.

**b.** often debits two or more work in process accounts.

**c.** generally credits two or more work in process accounts.

**d.** credits Finished Goods Inventory.

**5. (LO 2)** In a process cost system, manufacturing overhead:

**a.** is assigned to finished goods at the end of each accounting period.

**b.** is assigned to a work in process account for each job as the job is completed.

**c.** is assigned to a work in process account for each production department on the basis of a predetermined overhead rate.

**d.** is assigned to a work in process account for each production department as overhead costs are incurred.

**6. (LO 3)** Conversion costs are the sum of:

**a.** fixed and variable overhead costs.

**b.** direct labor costs and overhead costs.

**c.** direct material costs and overhead costs.

**d.** direct labor and indirect labor costs.

**7. (LO 3)** The Mixing Department's output during the period consists of 20,000 units completed and transferred out, and 5,000 units in ending work in process 60% complete as to materials and conversion costs. Beginning inventory is 1,000 units, 40% complete as to materials and conversion costs. The equivalent units of production are:

**a.** 22,600. **c.** 24,000.

**b.** 23,000. **d.** 25,000.

**8. (LO 3)** In RYZ Company, there are zero units in beginning work in process, 7,000 units started into production, and 500 units in ending work in process 20% completed. The physical units to be accounted for are:

**a.** 7,000. **c.** 7,500.

**b.** 7,360. **d.** 7,340.

**9. (LO 3)** Mora Company has 2,000 units in beginning work in process, 20% complete as to conversion costs, 23,000 units transferred out to finished goods, and 3,000 units in ending work in process $33\frac{1}{3}\%$ complete as to conversion costs.

The beginning and ending inventory is fully complete as to materials costs. Equivalent units for materials and conversion costs are, respectively:

**a.** 22,000, 24,000.

**b.** 24,000, 26,000.

**c.** 26,000, 24,000.

**d.** 26,000, 26,000.

**10. (LO 4)** Fortner Company has no beginning work in process; 9,000 units are transferred out and 3,000 units in ending work in process are one-third finished as to conversion costs and fully complete as to materials cost. If total materials cost is $60,000, the unit materials cost is:

**a.** $5.00.

**b.** $5.45 rounded.

**c.** $6.00.

**d.** No correct answer is given.

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**11.** **(LO 4)** Largo Company has unit costs of $10 for materials and $30 for conversion costs. If there are 2,500 units in ending work in process, 40% complete as to conversion costs, and fully complete as to materials cost, the total cost assignable to the ending work in process inventory is:

**a.** $45,000.
**b.** $55,000.
**c.** $75,000.
**d.** $100,000.

**12.** **(LO 4)** A production cost report:

**a.** is an external report.
**b.** shows both the production quantity and cost data related to a department.
**c.** shows equivalent units of production but not physical units.
**d.** contains six sections.

**13.** **(LO 4)** In a production cost report, units to be accounted for are calculated as:

**a.** Units started into production + Units in ending work in process.
**b.** Units started into production − Units in beginning work in process.
**c.** Units transferred out + Units in beginning work in process.
**d.** Units started into production + Units in beginning work in process.

***14.** **(LO 5)** Hollins Company uses the FIFO method to compute equivalent units. It has 2,000 units in beginning work in process, 20% complete as to conversion costs, 25,000 units started and completed, and 3,000 units in ending work in process, 30% complete as to conversion costs. All units are 100% complete as to materials. Equivalent units for materials and conversion costs are, respectively:

**a.** 28,000 and 26,600.
**b.** 28,000 and 27,500.
**c.** 27,000 and 26,200.
**d.** 27,000 and 29,600.

***15.** **(LO 5)** KLM Company uses the FIFO method to compute equivalent units. It has no beginning work in process; 9,000 units are started and completed and 3,000 units in ending work in process are one-third completed. All material is added at the beginning of the process. If total materials cost is $60,000, the unit materials cost is:

**a.** $5.00.
**b.** $6.00.
**c.** $6.67 (rounded).
**d.** No correct answer is given.

***16.** **(LO 5)** Toney Company uses the FIFO method to compute equivalent units. It has unit costs of $10 for materials and $30 for conversion costs. If there are 2,500 units in ending work in process, 100% complete as to materials and 40% complete as to conversion costs, the total cost assignable to the ending work in process inventory is:

**a.** $45,000.
**b.** $55,000.
**c.** $75,000.
**d.** $100,000.

## Solutions

**1.** **b.** The products produced are homogeneous, not heterogeneous, in nature. Choices (a), (c), and (d) are incorrect because they all represent characteristics of a process cost system.

**2.** **d.** Manufacturing costs are not assigned the same way in a job order and in a process cost system. Choices (a), (b), and (c) are true statements.

**3.** **d.** In a process cost system, the flow of costs is work in process, finished goods, cost of goods sold. Therefore, choices (a), (b), and (c) are incorrect.

**4.** **b.** The debit is often to two or more work in process accounts, not (a) a debit to Finished Goods Inventory, (c) credits to two or more work in process accounts, or (d) a credit to Finished Goods Inventory.

**5.** **c.** In a process cost system, manufacturing overhead is assigned to a work in process account for each production department on the basis of a predetermined overhead rate, not (a) to a finished goods account, (b) as the job is completed, or (d) as overhead costs are incurred.

**6.** **b.** Conversion costs are the sum of labor costs and overhead costs, not (a) the sum of fixed and variable overhead costs, (c) direct material costs and overhead costs, or (d) direct labor and indirect labor costs.

**7.** **b.** The equivalent units of production is the sum of units completed and transferred out (20,000) and the equivalent units of ending work in process inventory (5,000 units × 60%), or 20,000 + 3,000 = 23,000 units, not (a) 22,600 units, (c) 24,000 units, or (d) 25,000 units.

**8.** **a.** There are 7,000 physical units to be accounted for (0 units in beginning inventory + 7,000 units started), not (b) 7,360, (c) 7,500, or (d) 7,340.

**9.** **c.** The equivalent units for materials are 26,000 (23,000 units transferred out plus 3,000 in ending work in process inventory). The equivalent units for conversion costs are 24,000 (23,000 transferred out plus $33\frac{1}{3}$% of the ending work in process inventory or 1,000). Therefore, choices (a) 22,000, 24,000; (b) 24,000, 26,000; and (d) 26,000, 26,000 are incorrect.

**10.** **a.** $60,000 ÷ (9,000 + 3,000 units) = $5.00 per unit, not (b) $5.45 (rounded), (c) $6.00, or (d) no correct answer is given.

**11.** **b.** [(2,500 units × 100% complete) × $10] + [(2,500 units × 40% complete) × $30] or $25,000 + $30,000 = $55,000, not (a) $45,000, (c) $75,000, or (d) $100,000.

**12.** **b.** A production cost report shows costs charged to a department and costs accounted for as well as the production quantity. The other choices are incorrect because a production cost report (a) is an internal, not external, report; (c) does show physical units; and (d) is prepared in four steps and does not contain six sections.

**13.** **d.** In a production cost report, units to be accounted for are calculated as Units started in production + Units in beginning work in process, not (a) Units in ending work in process, (b) minus Units in beginning work in process, or (c) Units transferred out.

***14.** **b.** The equivalent units for materials are 28,000 [25,000 started and completed + (3,000 × 100%)]. The equivalent units for conversion costs are 27,500 [(2,000 × 80%) + 25,000 + (3,000 × 30%)]. Therefore, choices (a) 28,000, 26,600; (c) 27,000, 26,200; and (d) 27,000, 29,600 are incorrect.

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*15. **a.** Unit materials cost is $5.00 [$60,000 ÷ (9,000 + 3,000)]. Therefore, choices (b) $6.00, (c) $6.67 (rounded), and (d) no correct answer are incorrect.

*16. **b.** The total cost assignable to the ending work in process is $55,000 [($10 × 2,500) + ($30 × 2,500 × 40%)]. Therefore, choices (a) $45,000, (c) $75,000, and (d) $100,000 are incorrect.

## Practice Brief Exercises

**1. (LO 2)** Jeremiah Industries purchased $70,000 of raw materials on account. Supporting records show that the Assembly Department used $43,000 of the raw materials and the Finishing Department used the remainder. Prepare the journal entries relating to raw materials.

*Journalize the assignment of materials.*

### Solution

**1.**

| | | |
|---|---|---|
| Raw Materials Inventory | 70,000 | |
| Accounts Payable | | 70,000 |
| Work in Process—Assembly Department | 43,000 | |
| Work in Process—Finishing Department | 27,000 | |
| Raw Materials Inventory | | 70,000 |

**2. (LO 3)** The Cooking Department of Caleb Foods has the following production data for October: beginning work in process 3,000 units that are 100% complete as to materials and 30% complete as to conversion costs; units transferred out 10,000 units; and ending work in process 6,000 units that are 100% complete as to materials and 60% complete as to conversion costs. Compute the equivalent units of production for (a) materials and (b) conversion costs for the month of October.

*Compute equivalent units of production.*

### Solution

**2.**

| | (a) Materials | (b) Conversion Costs |
|---|---|---|
| Units transferred out | 10,000 | 10,000 |
| Work in process, November 30 | | |
| Materials (6,000 × 100%) | 6,000 | |
| Conversion costs (6,000 × 60%) | | 3,600 |
| Total equivalent units | 16,000 | 13,600 |

**3. (LO 4)** Smith Company has the following production data for April: units transferred out 50,000, and ending work in process 8,000 units that are 100% complete for materials and 30% complete for conversion costs. If unit materials cost is $3 and unit conversion cost is $8, determine the costs to be assigned to the units transferred out and the units in ending work in process.

*Compute costs to units transferred out and in process.*

### Solution

**3.**

| Assignment of Costs | Equivalent Units | Unit Cost | | |
|---|---|---|---|---|
| Transferred out | | | | |
| Transferred out | 50,000 | $11 | | $550,000 |
| Work in process, 4/30 | | | | |
| Materials | 8,000 | 3 | $24,000 | |
| Conversion costs | 2,400 | 8 | 19,200 | 43,200 |
| Total costs | | | | $593,200 |

**4. (LO 4)** Production costs chargeable to the Finishing Department in July in Lethbridge-Stewart Manufacturing are materials $60,000, labor $29,500, and overhead $11,000. Equivalent units of production are materials 30,000 and conversion costs 27,000. Production records indicate that 25,000 units were transferred out, and 5,000 units in ending work in process were 40% complete as to conversion costs and 100% complete as to materials.

*Prepare unit costs and cost reconciliation schedule.*

**a.** Compute the unit costs for materials and conversion costs.

**b.** Prepare a cost reconciliation schedule.

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### Solution

**4. a.**

| Total materials costs | ÷ | Equivalent units of materials | = | Unit materials cost |
|---|---|---|---|---|
| $60,000 | | 30,000 | | $2.00 |

| Total conversion costs* | ÷ | Equivalent units of conversion costs | = | Unit conversion cost |
|---|---|---|---|---|
| $40,500 | | 27,000 | | $1.50 |

*$29,500 + $11,000

**b.** Costs accounted for:

| | | | |
|---|---|---|---|
| Transferred out | (25,000 × $3.50) | | $87,500 |
| Work in process | | | |
| Materials | (5,000 × $2.00) | $10,000 | |
| Conversion costs | (2,000* × $1.50) | 3,000 | 13,000 |
| Total costs | | | $100,500 |

*5,000 × 40%

## Practice Exercises

*Journalize transactions.*

**1. (LO 2)** Armando Company manufactures pizza sauce through two production departments: Cooking and Canning. In each process, materials and conversion costs are incurred evenly throughout the process. For the month of April, the work in process accounts show the following debits.

| | Cooking | Canning |
|---|---|---|
| Beginning work in process | $ –0– | $ 4,000 |
| Materials | 25,000 | 8,000 |
| Labor | 8,500 | 7,500 |
| Overhead | 29,000 | 25,800 |
| Costs transferred in | | 55,000 |

### Instructions

Journalize the April transactions.

### Solution

| | | | | |
|---|---|---|---|---|
| **1.** April 30 | Work in Process—Cooking | | 25,000 | |
| | Work in Process—Canning | | 8,000 | |
| | Raw Materials Inventory | | | 33,000 |
| 30 | Work in Process—Cooking | | 8,500 | |
| | Work in Process—Canning | | 7,500 | |
| | Factory Labor | | | 16,000 |
| 30 | Work in Process—Cooking | | 29,000 | |
| | Work in Process—Canning | | 25,800 | |
| | Manufacturing Overhead | | | 54,800 |
| 30 | Work in Process—Canning | | 55,000 | |
| | Work in Process—Cooking | | | 55,000 |

*Prepare a production cost report.*

**2. (LO 3, 4)** The Sanding Department of Jo Furniture Company has the following production and manufacturing cost data for March 2020, the first month of operation.

Production: 11,000 units finished and transferred out; 4,000 units started that are 100% complete as to materials and 25% complete as to conversion costs.
Manufacturing costs: Materials $48,000; labor $42,000; and overhead $36,000.

### Instructions

Prepare a production cost report.

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**Solution**

**2.**

**Jo Furniture Company**
**Sanding Department**
**Production Cost Report**
**For the Month Ended March 31, 2020**

| Quantities | Physical Units | Equivalent Units: Materials | Equivalent Units: Conversion Costs | |
|---|---|---|---|---|
| Units to be accounted for | | | | |
| Work in process, March 1 | 0 | | | |
| Started into production | 15,000 | | | |
| Total units | 15,000 | | | |
| Units accounted for | | | | |
| Transferred out | 11,000 | 11,000 | 11,000 | |
| Work in process, March 31 | 4,000 | 4,000 | 1,000 | (4,000 × 25%) |
| Total units | 15,000 | 15,000 | 12,000 | |

| Costs | Materials | Conversion Costs | Total |
|---|---|---|---|
| Unit costs | | | |
| Costs in March | $48,000 | $78,000* | $126,000 |
| Equivalent units | 15,000 | 12,000 | |
| Unit costs [(a) + (b)] | $3.20 | $6.50 | $9.70 |
| Costs to be accounted for | | | |
| Work in process, March 1 | | | $ 0 |
| Started into production | | | 126,000 |
| Total costs | | | $126,000 |

**Cost Reconciliation Schedule**

| | | | |
|---|---|---|---|
| Costs accounted for | | | |
| Transferred out (11,000 × $9.70) | | | $106,700 |
| Work in process, March 31 | | | |
| Materials (4,000 × $3.20) | | $12,800 | |
| Conversion costs (1,000 × $6.50) | | 6,500 | 19,300 |
| Total costs | | | $126,000 |

*$42,000 + $36,000

## Practice Problem

*Prepare a production cost report and journalize.*

**(LO 3, 4)** Karlene Industries produces plastic ice cube trays in two processes: heating and stamping. All materials are added at the beginning of the Heating Department process. Karlene uses the weighted-average method to compute equivalent units.

On November 1, the Heating Department had in process 1,000 trays that were 70% complete. During November, it started into production 12,000 trays. On November 30, 2020, 2,000 trays that were 60% complete were in process.

The following cost information for the Heating Department was also available.

| | | | |
|---|---|---|---|
| Work in process, November 1: | | Costs incurred in November: | |
| Materials | $ 640 | Material | $3,000 |
| Conversion costs | 360 | Labor | 2,300 |
| Cost of work in process, Nov. 1 | $1,000 | Overhead | 4,050 |

### Instructions

**a.** Prepare a production cost report for the Heating Department for the month of November 2020, using the weighted-average method.

**b.** Journalize the transfer of costs to the Stamping Department.

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**Solution**

**a.**

**Karlene Industries**
**Heating Department**
**Production Cost Report**
**For the Month Ended November 30, 2020**

| | | Equivalent Units | |
|---|---|---|---|
| | Physical Units | Materials | Conversion Costs |
| **Quantities** | Step 1 | Step 2 | |
| Units to be accounted for | | | |
| Work in process, November 1 | 1,000 | | |
| Started into production | 12,000 | | |
| Total units | 13,000 | | |
| Units accounted for | | | |
| Transferred out | 11,000 | 11,000 | 11,000 |
| Work in process, November 30 | 2,000 | 2,000 | 1,200 |
| Total units | 13,000 | 13,000 | 12,200 |

| **Costs** | | | | |
|---|---|---|---|---|
| Unit costs Step 3 | | **Materials** | **Conversion Costs** | **Total** |
| Total cost | (a) | $ 3,640* | $ 6,710** | $10,350 |
| Equivalent units | (b) | 13,000 | 12,200 | |
| Unit costs [(a) ÷ (b)] | | $0.28 | $0.55 | $0.83 |
| Costs to be accounted for | | | | |
| Work in process, November 1 | | | | $ 1,000 |
| Started into production | | | | 9,350 |
| Total costs | | | | $10,350 |

*$640 + $3,000
**$360 + $2,300 + $4,050

| **Cost Reconciliation Schedule** Step 4 | | |
|---|---|---|
| Costs accounted for | | |
| Transferred out (11,000 × $0.83) | | $ 9,130 |
| Work in process, November 30 | | |
| Materials (2,000 × $0.28) | $560 | |
| Conversion costs (1,200 × $0.55) | 660 | 1,220 |
| Total costs | | $10,350 |

| | | | |
|---|---|---|---|
| **b.** Work in Process—Stamping | 9,130 | | |
| Work in Process—Heating | | | 9,130 |
| (To record transfer of units to the Stamping Department) | | | |

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendix to this chapter.

## Questions

**1.** Identify which costing system—job order or process cost—the following companies would primarily use: (a) **Quaker Oats**, (b) **Jif Peanut Butter**, (c) **Gulf Craft** (luxury yachts), and (d) **Warner Bros. Motion Pictures**.

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**2.** Contrast the primary focus of job order cost accounting and of process cost accounting.

**3.** What are the similarities between a job order and a process cost system?

**4.** Your roommate is confused about the features of process cost accounting. Identify and explain the distinctive features for your roommate.

**5.** Sam Bowyer believes there are no significant differences in the flow of costs between job order cost accounting and process cost accounting. Is Bowyer correct? Explain.

**6. a.** What source documents are used in assigning (1) materials and (2) labor to production in a process cost system?

**b.** What criterion and basis are commonly used in allocating overhead to processes?

**7.** At Ely Company, overhead is assigned to production departments at the rate of $5 per machine hour. In July, machine hours were 3,000 in the Machining Department and 2,400 in the Assembly Department. Prepare the entry to assign overhead to production.

**8.** Mark Haley is uncertain about the steps used to prepare a production cost report. State the procedures that are required in the sequence in which they are performed.

**9.** John Harbeck is confused about computing physical units. Explain to John how physical units to be accounted for and physical units accounted for are determined.

**10.** What is meant by the term "equivalent units of production"?

**11.** How are equivalent units of production computed?

**12.** Coats Company had zero units of beginning work in process. During the period, 9,000 units were completed, and there were 600 units of ending work in process. How many units were started into production?

**13.** Sanchez Co. has zero units of beginning work in process. During the period, 12,000 units were completed, and there were 500 units of ending work in process one-fifth complete as to conversion cost and 100% complete as to materials cost. What were the equivalent units of production for (a) materials and (b) conversion costs?

**14.** Hindi Co. started 3,000 units during the period. Its beginning inventory is 500 units one-fourth complete as to conversion costs and 100% complete as to materials costs. Its ending inventory is 300 units one-fifth complete as to conversion costs and 100% complete as to materials costs. How many units were transferred out this period?

**15.** Clauss Company transfers out 14,000 units and has 2,000 units of ending work in process that are 25% complete. Materials are entered at the beginning of the process and there is no beginning work in process. Assuming unit materials costs of $3 and unit conversion costs of $5, what are the costs to be assigned to units (a) transferred out and (b) in ending work in process?

**16. a.** Ann Quinn believes the production cost report is an external report for stockholders. Is Ann correct? Explain.

**b.** Identify the sections in a production cost report.

**17.** What purposes are served by a production cost report?

**18.** At Trent Company, there are 800 units of ending work in process that are 100% complete as to materials and 40% complete as to conversion costs. If the unit cost of materials is $3 and the total costs assigned to the 800 units is $6,000, what is the per unit conversion cost?

**19.** What is the difference between operations costing and a process cost system?

**20.** How does a company decide whether to use a job order or a process cost system?

***21.** Soria Co. started and completed 2,000 units for the period. Its beginning inventory is 800 units 25% complete and its ending inventory is 400 units 20% complete. Soria uses the FIFO method to compute equivalent units. How many units were transferred out this period?

***22.** Reyes Company transfers out 12,000 units and has 2,000 units of ending work in process that are 25% complete. Materials are entered at the beginning of the process and there is no beginning work in process. Reyes uses the FIFO method to compute equivalent units. Assuming unit materials costs of $3 and unit conversion costs of $7, what are the costs to be assigned to units (a) transferred out and (b) in ending work in process?

## Brief Exercises

**BE21.1 (LO 2)** Warner Company purchases $50,000 of raw materials on account, and it incurs $60,000 of factory labor costs. Journalize the two transactions on March 31, assuming the labor costs are not paid until April.

*Journalize entries for accumulating costs.*

**BE21.2 (LO 2)** Data for Warner Company are given in BE21.1. Supporting records show that (a) the Assembly Department used $24,000 of the raw materials and $35,000 of the factory labor, and (b) the Finishing Department used the remainder. Journalize the assignment of the costs to the processing departments on March 31.

*Journalize the assignment of materials and labor costs.*

**BE21.3 (LO 2)** Factory labor data for Warner Company are given in BE21.2. Manufacturing overhead is assigned to departments on the basis of 160% of labor costs. Journalize the assignment of overhead to the Assembly and Finishing Departments.

*Journalize the assignment of overhead costs.*

**BE21.4 (LO 3)** Goode Company has the following production data for selected months.

*Compute equivalent units of production.*

| Month | Beginning Work in Process | Units Transferred Out | Ending Work in Process | |
|---|---|---|---|---|
| | | | Units | % Complete as to Conversion Cost |
| January | –0– | 35,000 | 10,000 | 40% |
| March | –0– | 40,000 | 8,000 | 75 |
| July | –0– | 45,000 | 16,000 | 25 |

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Compute equivalent units of production for materials and conversion costs, assuming materials are entered at the beginning of the process.

*Compute equivalent units of production.*

**BE21.5 (LO 3)** The Smelting Department of Kiner Company has the following production data for November.

> Beginning work in process 2,000 units that are 100% complete as to materials and 20% complete as to conversion costs; units transferred out 9,000 units; and ending work in process 7,000 units that are 100% complete as to materials and 40% complete as to conversion costs.

Compute the equivalent units of production for (a) materials and (b) conversion costs for the month of November.

*Compute unit costs of production.*

**BE21.6 (LO 4)** In Mordica Company, total materials costs are $33,000, and total conversion costs are $54,000. Equivalent units of production are materials 10,000 and conversion costs 12,000. Compute the unit costs for materials, conversion costs, and total manufacturing costs.

*Assign costs to units transferred out and in process.*

**BE21.7 (LO 4)** Trek Company has the following production data for April: units transferred out 40,000, and ending work in process 5,000 units that are 100% complete for materials and 40% complete for conversion costs. If unit materials cost is $4 and unit conversion cost is $7, determine the costs to be assigned to the units transferred out and the units in ending work in process.

*Compute unit costs.*

**BE21.8 (LO 4)** Production costs chargeable to the Finishing Department in June in Hollins Company are materials $12,000, labor $29,500, and overhead $18,000. Equivalent units of production are materials 20,000 and conversion costs 19,000. Compute the unit costs for materials and conversion costs.

*Prepare cost reconciliation schedule.*

**BE21.9 (LO 4)** Data for Hollins Company are given in BE21.8. Production records indicate that 18,000 units were transferred out, and 2,000 units in ending work in process were 50% complete as to conversion costs and 100% complete as to materials. Prepare a cost reconciliation schedule.

*Assign costs to units transferred out and in process.*

***BE21.10 (LO 5)** Pix Company has the following production data for March: no beginning work in process, units started and completed 30,000, and ending work in process 5,000 units that are 100% complete for materials and 40% complete for conversion costs. Pix uses the FIFO method to compute equivalent units. If unit materials cost is $6 and unit conversion cost is $10, determine the costs to be assigned to the units transferred out and the units in ending work in process. The total costs to be assigned are $530,000.

*Prepare a partial production cost report using the FIFO approach.*

***BE21.11 (LO 5)** Using the data in BE21.10, prepare the cost section of the production cost report for Pix Company using the FIFO approach.

*Compute unit costs.*

***BE21.12 (LO 5)** Production costs chargeable to the Finishing Department in May at Kim Company are materials $8,000, labor $20,000, overhead $18,000, and transferred-in costs $67,000. Equivalent units of production are materials 20,000 and conversion costs 19,000. Kim uses the FIFO method to compute equivalent units. Compute the unit costs for materials and conversion costs. Transferred-in costs are considered materials costs.

## DO IT! Exercises

*Compare job order and process cost systems.*

**DO IT! 21.1 (LO 1)** Indicate whether each of the following statements is true or false.

1. Many hospitals use job order costing for small, routine medical procedures.
2. A manufacturer of computer flash drives would use a job order cost system.
3. A process cost system uses multiple work in process accounts.
4. A process cost system keeps track of costs on job cost sheets.

*Assign and journalize manufacturing costs.*

**DO IT! 21.2 (LO 2)** Kopa Company manufactures CH-21 through two processes: mixing and packaging. In July, the following costs were incurred.

| | Mixing | Packaging |
|---|---|---|
| Raw materials used | $10,000 | $28,000 |
| Factory labor costs | 8,000 | 36,000 |
| Manufacturing overhead costs | 12,000 | 54,000 |

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Units completed at a cost of $21,000 in the Mixing Department are transferred to the Packaging Department. Units completed at a cost of $106,000 in the Packaging Department are transferred to Finished Goods. Journalize the assignment of these costs to the two processes and the transfer of units as appropriate.

**DO IT! 21.3 (LO 3)** The Assembly Department for Right pens has the following production data for the current month. *Compute equivalent units.*

| Beginning Work in Process | Units Transferred Out | Ending Work in Process |
|---|---|---|
| –0– | 20,000 | 10,000 |

Materials are entered at the beginning of the process. The ending work in process units are 70% complete as to conversion costs. Compute the equivalent units of production for (a) materials and (b) conversion costs.

**DO IT! 21.4 (LO 4)** In March, Kelly Company had the following unit production costs: materials $10 and conversion costs $8. On March 1, it had no work in process. During March, Kelly transferred out 22,000 units. As of March 31, 4,000 units that were 40% complete as to conversion costs and 100% complete as to materials were in ending work in process. *Prepare cost reconciliation schedule.*

**a.** Compute the total units to be accounted for.

**b.** Compute the equivalent units of production.

**c.** Prepare a cost reconciliation schedule, including the costs of materials transferred out and the costs of materials in process.

## Exercises

**E21.1 (LO 1)** Robert Wilkins has prepared the following list of statements about process cost accounting. *Understand process cost accounting.*

1. Process cost systems are used to apply costs to similar products that are mass-produced in a continuous fashion.
2. A process cost system is used when each finished unit is indistinguishable from another.
3. Companies that produce soft drinks, movies, and computer chips would all use process cost accounting.
4. In a process cost system, costs are tracked by individual jobs.
5. Job order costing and process costing track different manufacturing cost elements.
6. Both job order costing and process costing account for direct materials, direct labor, and manufacturing overhead.
7. Costs flow through the accounts in the same basic way for both job order costing and process costing.
8. In a process cost system, only one work in process account is used.
9. In a process cost system, costs are summarized in a job cost sheet.
10. In a process cost system, the unit cost is total manufacturing costs for the period divided by the equivalent units produced during the period.

### Instructions

Identify each statement as true or false. If false, indicate how to correct the statement.

**E21.2 (LO 2)** Harrelson Company manufactures pizza sauce through two production departments: Cooking and Canning. In each process, materials and conversion costs are incurred evenly throughout the process. For the month of April, the work in process accounts show the following debits. *Journalize transactions.*

| | Cooking | Canning |
|---|---|---|
| Beginning work in process | $ –0– | $ 4,000 |
| Materials | 21,000 | 9,000 |
| Labor | 8,500 | 7,000 |
| Overhead | 31,500 | 25,800 |
| Costs transferred in | | 53,000 |

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**Instructions**

Journalize the April transactions.

*Answer questions on costs and production.*

**E21.3 (LO 2, 3, 4)** The ledger of American Company has the following work in process account.

**Work in Process—Painting**

| | | | | | |
|---|---|---|---|---|---|
| 5/1 | Balance | 3,590 | 5/31 | Transferred out | ? |
| 5/31 | Materials | 5,160 | | | |
| 5/31 | Labor | 2,530 | | | |
| 5/31 | Overhead | 1,380 | | | |
| 5/31 | Balance | ? | | | |

Production records show that there were 400 units in the beginning inventory, 30% complete, 1,600 units started, and 1,700 units transferred out. The beginning work in process had materials cost of $2,040 and conversion costs of $1,550. The units in ending inventory were 40% complete. Materials are entered at the beginning of the painting process.

**Instructions**

**a.** How many units are in process at May 31?

**b.** What is the unit materials cost for May?

**c.** What is the unit conversion cost for May?

**d.** What is the total cost of units transferred out in May?

**e.** What is the cost of the May 31 inventory?

*Journalize transactions for two processes.*

**E21.4 (LO 2)** Schrager Company has two production departments: Cutting and Assembly. July 1 inventories are Raw Materials $4,200, Work in Process—Cutting $2,900, Work in Process—Assembly $10,600, and Finished Goods $31,000. During July, the following transactions occurred.

**1.** Purchased $62,500 of raw materials on account.

**2.** Incurred $60,000 of factory labor. (Credit Wages Payable.)

**3.** Incurred $70,000 of manufacturing overhead; $40,000 was paid and the remainder is unpaid.

**4.** Requisitioned materials for Cutting $15,700 and Assembly $8,900.

**5.** Used factory labor for Cutting $33,000 and Assembly $27,000.

**6.** Applied overhead at the rate of $18 per machine hour. Machine hours were Cutting 1,680 and Assembly 1,720.

**7.** Transferred goods costing $67,600 from the Cutting Department to the Assembly Department.

**8.** Transferred goods costing $134,900 from Assembly to Finished Goods.

**9.** Sold goods costing $150,000 for $200,000 on account.

**Instructions**

Journalize the transactions. (Omit explanations.)

*Compute physical units and equivalent units of production.*

**E21.5 (LO 3, 4)** In Shady Company, materials are entered at the beginning of each process. Work in process inventories, with the percentage of work done on conversion costs, and production data for its Sterilizing Department in selected months during 2020 are as follows.

| | Beginning Work in Process | | | Ending Work in Process | |
|---|---|---|---|---|---|
| Month | Units | Conversion Cost% | Units Transferred Out | Units | Conversion Cost% |
| January | –0– | — | 11,000 | 2,000 | 60 |
| March | –0– | — | 12,000 | 3,000 | 30 |
| May | –0– | — | 14,000 | 7,000 | 80 |
| July | –0– | — | 10,000 | 1,500 | 40 |

**Instructions**

**a.** Compute the physical units for January and May.

**b.** Compute the equivalent units of production for (1) materials and (2) conversion costs for each month.

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**E21.6 (LO 3, 4)** The Cutting Department of Cassel Company has the following production and cost data for July. *Determine equivalent units, unit costs, and assignment of costs.*

| Production | Costs | |
|---|---|---|
| 1. Transferred out 12,000 units. | Beginning work in process | $ –0– |
| 2. Started 3,000 units that are 60% complete as to conversion costs and 100% complete as to materials at July 31. | Materials | 45,000 |
| | Labor | 16,200 |
| | Manufacturing overhead | 18,300 |

Materials are entered at the beginning of the process. Conversion costs are incurred uniformly during the process.

### Instructions

**a.** Determine the equivalent units of production for (1) materials and (2) conversion costs.

**b.** Compute unit costs and prepare a cost reconciliation schedule.

**E21.7 (LO 3, 4)** The Sanding Department of Quik Furniture Company has the following production and manufacturing cost data for March 2020, the first month of operation. *Prepare a production cost report.*

*Production:* 7,000 units finished and transferred out; 3,000 units started that are 100% complete as to materials and 20% complete as to conversion costs.

*Manufacturing costs:* Materials $33,000; labor $21,000; and overhead $36,000.

### Instructions

Prepare a production cost report.

**E21.8 (LO 3, 4)** The Blending Department of Luongo Company has the following cost and production data for the month of April. *Determine equivalent units, unit costs, and assignment of costs.*

| | |
|---|---|
| Costs: | |
| Work in process, April 1 | |
| Direct materials: 100% complete | $100,000 |
| Conversion costs: 20% complete | 70,000 |
| Cost of work in process, April 1 | $170,000 |
| Costs incurred during production in April | |
| Direct materials | $ 800,000 |
| Conversion costs | 365,000 |
| Costs incurred in April | $1,165,000 |

Units transferred out totaled 17,000. Ending work in process was 1,000 units that are 100% complete as to materials and 40% complete as to conversion costs.

### Instructions

**a.** Compute the equivalent units of production for (1) materials and (2) conversion costs for the month of April.

**b.** Compute the unit costs for the month.

**c.** Determine the costs to be assigned to the units transferred out and in ending work in process.

**E21.9 (LO 3, 4)** Baden Company has gathered the following information. *Determine equivalent units, unit costs, and assignment of costs.*

| | |
|---|---|
| Units in beginning work in process | –0– |
| Units started into production | 36,000 |
| Units in ending work in process | 6,000 |
| Percent complete in ending work in process: | |
| Conversion costs | 40% |
| Materials | 100% |
| Costs incurred: | |
| Direct materials | $72,000 |
| Direct labor | $61,000 |
| Overhead | $101,000 |

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**Instructions**

**a.** Compute equivalent units of production for materials and for conversion costs.

**b.** Determine the unit costs of production.

**c.** Show the assignment of costs to units transferred out and in process.

*Determine equivalent units, unit costs, and assignment of costs.*

**E21.10 (LO 3, 4)** Overton Company has gathered the following information.

| | |
|---|---|
| Units in beginning work in process | 20,000 |
| Units started into production | 164,000 |
| Units in ending work in process | 24,000 |
| Percent complete in ending work in process: | |
| Conversion costs | 60% |
| Materials | 100% |
| Costs incurred: | |
| Direct materials | $101,200 |
| Direct labor | $164,800 |
| Overhead | $184,000 |

**Instructions**

**a.** Compute equivalent units of production for materials and for conversion costs.

**b.** Determine the unit costs of production.

**c.** Show the assignment of costs to units transferred out and in process.

*Compute equivalent units, unit costs, and costs assigned.*

Excel

**E21.11 (LO 3, 4)** The Polishing Department of Major Company has the following production and manufacturing cost data for September. Materials are entered at the beginning of the process.

*Production:* Beginning inventory 1,600 units that are 100% complete as to materials and 30% complete as to conversion costs; units started during the period are 42,900; ending inventory of 5,000 units 10% complete as to conversion costs.

*Manufacturing costs:* Beginning inventory costs, comprised of $20,000 of materials and $43,180 of conversion costs; materials costs added in Polishing during the month, $175,800; labor and overhead applied in Polishing during the month, $125,680 and $257,140, respectively.

**Instructions**

**a.** Compute the equivalent units of production for materials and conversion costs for the month of September.

**b.** Compute the unit costs for materials and conversion costs for the month.

**c.** Determine the costs to be assigned to the units transferred out and in process.

*Explain the production cost report.*

**E21.12 (LO 4)** Writing David Skaros has recently been promoted to production manager. He has just started to receive various managerial reports, including the production cost report that you prepared. It showed that his department had 2,000 equivalent units in ending inventory. His department has had a history of not keeping enough inventory on hand to meet demand. He has come to you, very angry, and wants to know why you credited him with only 2,000 units when he knows he had at least twice that many on hand.

**Instructions**

Explain to him why his production cost report showed only 2,000 equivalent units in ending inventory. Write an informal memo. Be kind and explain very clearly why he is mistaken.

*Prepare a production cost report.*

**E21.13 (LO 3, 4)** The Welding Department of Healthy Company has the following production and manufacturing cost data for February 2020. All materials are added at the beginning of the process.

| Manufacturing Costs | | |
|---|---|---|
| Beginning work in process | | |
| Materials | $18,000 | |
| Conversion costs | 14,175 | $ 32,175 |
| Materials | | 180,000 |
| Labor | | 67,380 |
| Overhead | | 61,445 |

| Production Data | |
|---|---|
| Beginning work in process | 15,000 units |
| | 1/10 complete |
| Units transferred out | 55,000 |
| Units started | 51,000 |
| Ending work in process | 11,000 units |
| | 1/5 complete |

**Instructions**

Prepare a production cost report for the Welding Department for the month of February.

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**E21.14 (LO 3, 4)** **Service** Remington Inc. is contemplating the use of process costing to track the costs of its operations. The operation consists of three segments (departments): Receiving, Shipping, and Delivery. Containers are received at Remington's docks and sorted according to the ship they will be carried on. The containers are loaded onto a ship, which carries them to the appropriate port of destination. The containers are then off-loaded and delivered to the Receiving Department.

*Compute physical units and equivalent units of production.*

Remington wants to begin using process costing in the Shipping Department. Direct materials represent the fuel costs to run the ship, and "Containers in transit" represents work in process. Listed below is information about the Shipping Department's first month's activity.

| | |
|---|---|
| Containers in transit, April 1 | 0 |
| Containers loaded | 1,200 |
| Containers in transit, April 30 | 350, 40% of direct materials and 20% of conversion costs |

**Instructions**

**a.** Determine the physical flow of containers for the month.

**b.** Calculate the equivalent units for direct materials and conversion costs.

**E21.15 (LO 3, 4)** **Service** Santana Mortgage Company uses a process cost system to accumulate costs in its Application Department. When an application is completed, it is forwarded to the Loan Department for final processing. The following processing and cost data pertain to September.

*Determine equivalent units, unit costs, and assignment of costs.*

1. Applications in process on September 1: 100.
2. Applications started in September: 1,000.
3. Completed applications during September: 800.
4. Applications still in process at September 30: 100% complete as to materials (forms) and 60% complete as to conversion costs.

| | |
|---|---|
| Beginning WIP: | |
| Direct materials | $ 1,000 |
| Conversion costs | 3,960 |
| September costs: | |
| Direct materials | $ 4,500 |
| Direct labor | 12,000 |
| Overhead | 9,520 |

Materials are the forms used in the application process, and these costs are incurred at the beginning of the process. Conversion costs are incurred uniformly during the process.

**Instructions**

**a.** Determine the equivalent units of service (production) for materials and conversion costs.

**b.** Compute the unit costs and prepare a cost reconciliation schedule.

***E21.16 (LO 5)** **Service** Using the data in E21.15, assume Santana Mortgage Company uses the FIFO method. Also, assume that the applications in process on September 1 were 100% complete as to materials (application forms) and 40% complete as to conversion costs. Assume overhead costs were $9,620 instead of $9,520.

*Compute equivalent units, unit costs, and costs assigned.*

**Instructions**

**a.** Determine the equivalent units of service (production) for materials and conversion costs.

**b.** Compute the unit costs and prepare a cost reconciliation schedule.

***E21.17 (LO 5)** The Cutting Department of Lasso Company has the following production and cost data for August.

*Determine equivalent units, unit costs, and assignment of costs.*

| Production | Costs | |
|---|---|---|
| 1. Started and completed 10,000 units. | Beginning work in process | $ –0– |
| 2. Started 2,000 units that are 40% completed at August 31. | Materials | 45,000 |
| | Labor | 13,600 |
| | Manufacturing overhead | 16,100 |

Materials are entered at the beginning of the process. Conversion costs are incurred uniformly during the process. Lasso Company uses the FIFO method to compute equivalent units.

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**Instructions**

**a.** Determine the equivalent units of production for (1) materials and (2) conversion costs.

**b.** Compute unit costs and show the assignment of manufacturing costs to units transferred out and in work in process.

*Compute equivalent units, unit costs, and costs assigned.*

***E21.18 (LO 5)** The Smelting Department of Polzin Company has the following production and cost data for September.

*Production:* Beginning work in process 2,000 units that are 100% complete as to materials and 20% complete as to conversion costs; units started and finished 9,000 units; and ending work in process 1,000 units that are 100% complete as to materials and 40% complete as to conversion costs.

*Manufacturing costs:* Work in process, September 1, $15,200; materials added $60,000; labor and overhead $132,000.

Polzin uses the FIFO method to compute equivalent units.

**Instructions**

**a.** Compute the equivalent units of production for (1) materials and (2) conversion costs for the month of September.

**b.** Compute the unit costs for the month.

**c.** Determine the costs to be assigned to the units transferred out and in process.

*Answer questions on costs and production.*

***E21.19 (LO 5)** The ledger of Hasgrove Company has the following work in process account.

**Work in Process—Painting**

| | | | | | |
|---|---|---|---|---|---|
| 3/1 | Balance | 3,680 | 3/31 | Transferred out | ? |
| 3/31 | Materials | 6,600 | | | |
| 3/31 | Labor | 2,400 | | | |
| 3/31 | Overhead | 1,150 | | | |
| 3/31 | Balance | ? | | | |

Production records show that there were 800 units in the beginning inventory, 30% complete, 1,100 units started, and 1,500 units transferred out. The units in ending inventory were 40% complete. Materials are entered at the beginning of the painting process. Hasgrove uses the FIFO method to compute equivalent units.

**Instructions**

Answer the following questions.

**a.** How many units are in process at March 31?

**b.** What is the unit materials cost for March?

**c.** What is the unit conversion cost for March?

**d.** What is the total cost of units started in February and completed in March?

**e.** What is the total cost of units started and finished in March?

**f.** What is the cost of the March 31 inventory?

*Prepare a production cost report for a second process.*

***E21.20 (LO 5)** The Welding Department of Majestic Company has the following production and manufacturing cost data for February 2020. All materials are added at the beginning of the process. Majestic uses the FIFO method to compute equivalent units.

| Manufacturing Costs | |
|---|---|
| Beginning work in process | $ 32,175 |
| Costs transferred in | 135,000 |
| Materials | 57,000 |
| Labor | 35,100 |
| Overhead | 68,400 |

| Production Data | |
|---|---|
| Beginning work in process | 15,000 units, 10% complete |
| Units transferred out | 54,000 |
| Units transferred in | 64,000 |
| Ending work in process | 25,000 units 20% complete |

**Instructions**

Prepare a production cost report for the Welding Department for the month of February. Transferred-in costs are considered materials costs.

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## Problems: Set A

**P21.1A (LO 2)** Fire Out Company manufactures its product, Vitadrink, through two manufacturing processes: Mixing and Packaging. All materials are entered at the beginning of each process. On October 1, 2020, inventories consisted of Raw Materials $26,000, Work in Process—Mixing $0, Work in Process—Packaging $250,000, and Finished Goods $289,000. The beginning inventory for Packaging consisted of 10,000 units that were 50% complete as to conversion costs and fully complete as to materials. During October, 50,000 units were started into production in the Mixing Department and the following transactions were completed.

*Journalize transactions.*

1. Purchased $300,000 of raw materials on account.
2. Issued raw materials for production: Mixing $210,000 and Packaging $45,000.
3. Incurred labor costs of $278,900.
4. Used factory labor: Mixing $182,500 and Packaging $96,400.
5. Incurred $810,000 of manufacturing overhead on account.
6. Applied manufacturing overhead on the basis of $23 per machine hour. Machine hours were 28,000 in Mixing and 6,000 in Packaging.
7. Transferred 45,000 units from Mixing to Packaging at a cost of $979,000.
8. Transferred 53,000 units from Packaging to Finished Goods at a cost of $1,315,000.
9. Sold goods costing $1,604,000 for $2,500,000 on account.

### Instructions

Journalize the October transactions.

**P21.2A (LO 3, 4)** Rosenthal Company manufactures bowling balls through two processes: Molding and Packaging. In the Molding Department, the urethane, rubber, plastics, and other materials are molded into bowling balls. In the Packaging Department, the balls are placed in cartons and sent to the finished goods warehouse. All materials are entered at the beginning of each process. Labor and manufacturing overhead are incurred uniformly throughout each process. Production and cost data for the Molding Department during June 2020 are presented below.

*Complete four steps necessary to prepare a production cost report.*

| Production Data | June |
|---|---|
| Beginning work in process units | –0– |
| Units started into production | 22,000 |
| Ending work in process units | 2,000 |
| Percent complete—ending inventory | 40% |
| **Cost Data** | |
| Materials | $198,000 |
| Labor | 53,600 |
| Overhead | 112,800 |
| Total | $364,400 |

### Instructions

**a.** Prepare a schedule showing physical units of production.

**b.** Determine the equivalent units of production for materials and conversion costs.

**c.** Compute the unit costs of production.

**d.** Determine the costs to be assigned to the units transferred out and in process for June.

**e.** Prepare a production cost report for the Molding Department for the month of June.

c. Materials $9.00
CC $8.00
d. Transferred out $340,000
WIP $ 24,400

**P21.3A (LO 3, 4)** Thakin Industries Inc. manufactures dorm furniture in separate processes. In each process, materials are entered at the beginning, and conversion costs are incurred uniformly. Production and cost data for the first process in making a product are as follows.

*Complete four steps necessary to prepare a production cost report.*

| Production Data—July | Cutting Department T12-Tables |
|---|---|
| Work in process units, July 1 | –0– |
| Units started into production | 20,000 |
| Work in process units, July 31 | 3,000 |
| Work in process percent complete | 60 |

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| Cost Data—July | |
|---|---|
| Work in process, July 1 | $ –0– |
| Materials | 380,000 |
| Labor | 234,400 |
| Overhead | 104,000 |
| Total | $718,400 |

**Instructions**

**a.** **1.** Compute the physical units of production.

**2.** Compute equivalent units of production for materials and for conversion costs.

**3.** Determine the unit costs of production.

**4.** Show the assignment of costs to units transferred out and in process.

**b.** Prepare the production cost report for July 2020.

a. 3. Materials $19
CC $18
4. Transferred out $629,000
WIP $ 89,400

*Assign costs and prepare production cost report.*

**P21.4A (LO 3, 4)** Rivera Company has several processing departments. Costs charged to the Assembly Department for November 2020 totaled $2,280,000 as follows.

| | | |
|---|---|---|
| Work in process, November 1 | | |
| Materials | $79,000 | |
| Conversion costs | 48,150 | $ 127,150 |
| Materials added | | 1,589,000 |
| Labor | | 225,920 |
| Overhead | | 337,930 |

Production records show that 35,000 units were in beginning work in process 30% complete as to conversion costs, 660,000 units were started into production, and 25,000 units were in ending work in process 40% complete as to conversion costs. Materials are entered at the beginning of each process.

**Instructions**

**a.** Determine the equivalent units of production and the unit production costs for the Assembly Department.

**b.** Determine the assignment of costs to goods transferred out and in process.

**c.** Prepare a production cost report for the Assembly Department.

b. Transferred out $2,211,000
WIP $ 69,000

*Determine equivalent units and unit costs and assign costs.*

**P21.5A (LO 3, 4)** Polk Company manufactures basketballs. Materials are added at the beginning of the production process and conversion costs are incurred uniformly. Production and cost data for the month of July 2020 are as follows.

| Production Data—Basketballs | Units | Percentage Complete |
|---|---|---|
| Work in process units, July 1 | 500 | 60% |
| Units started into production | 1,000 | |
| Work in process units, July 31 | 600 | 40% |

| Cost Data—Basketballs | | |
|---|---|---|
| Work in process, July 1 | | |
| Materials | $750 | |
| Conversion costs | 600 | $1,350 |
| Direct materials | | 2,400 |
| Direct labor | | 1,580 |
| Manufacturing overhead | | 1,240 |

**Instructions**

**a.** Calculate the following.

**1.** The equivalent units of production for materials and conversion costs.

**2.** The unit costs of production for materials and conversion costs.

**3.** The assignment of costs to units transferred out and in process at the end of the accounting period.

**b.** Prepare a production cost report for the month of July for the basketballs.

a. 2. Materials $2.10
3. Transferred out $4,590
WIP $1,980

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**P21.6A (LO 3, 4)** Hamilton Processing Company uses a weighted-average process cost system and manufactures a single product—an industrial carpet shampoo and cleaner used by many universities. The manufacturing activity for the month of October has just been completed. A partially completed production cost report for the month of October for the Mixing and Cooking Department is shown as follows.

*Compute equivalent units and complete production cost report.*

**Hamilton Processing Company**
**Mixing and Cooking Department**
**Production Cost Report**
**For the Month Ended October 31**

| Quantities | Physical Units | Equivalent Units: Materials | Equivalent Units: Conversion Costs |
|---|---|---|---|
| Units to be accounted for | | | |
| Work in process, October 1 (all materials, 70% conversion costs) | 20,000 | | |
| Started into production | 150,000 | | |
| Total units | 170,000 | | |
| Units accounted for | | | |
| Transferred out | 120,000 | ? | ? |
| Work in process, October 31 (60% materials, 40% conversion costs) | 50,000 | ? | ? |
| Total units accounted for | 170,000 | ? | ? |

**Costs**

| Unit costs | Materials | | Conversion Costs | | Total |
|---|---|---|---|---|---|
| Total cost | $240,000 | | $105,000 | | $345,000 |
| Equivalent units | ? | | ? | | |
| Unit costs | $ ? | + | $ ? | = | $ ? |
| Costs to be accounted for | | | | | |
| Work in process, October 1 | | | | | $ 30,000 |
| Started into production | | | | | 315,000 |
| Total costs | | | | | $345,000 |

**Cost Reconciliation Schedule**

| | | |
|---|---|---|
| Costs accounted for | | |
| Transferred out | | $ ? |
| Work in process, October 31 | | |
| Materials | $ ? | |
| Conversion costs | ? | ? |
| Total costs | | $ ? |

## Instructions

**a.** Prepare a schedule that shows how the equivalent units were computed so that you can complete the "Quantities: Units accounted for" equivalent units section shown in the production cost report, and compute October unit costs.

**b.** Complete the "Cost Reconciliation Schedule" part of the production cost report.

a. Materials $1.60
b. Transferred out $282,000
WIP $ 63,000

***P21.7A (LO 5)** Owen Company manufactures bicycles and tricycles. For both products, materials are added at the beginning of the production process, and conversion costs are incurred uniformly. Owen Company uses the FIFO method to compute equivalent units. Production and cost data for the month of March are as follows.

*Determine equivalent units and unit costs and assign costs for processes; prepare production cost report.*

| Production Data—Bicycles | Units | Percentage Complete |
|---|---|---|
| Work in process units, March 1 | 200 | 80% |
| Units started into production | 1,000 | |
| Work in process units, March 31 | 300 | 40% |

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| Cost Data—Bicycles | |
|---|---|
| Work in process, March 1 | $19,280 |
| Direct materials | 50,000 |
| Direct labor | 25,900 |
| Manufacturing overhead | 30,000 |

| Production Data—Tricycles | Units | Percentage Complete |
|---|---|---|
| Work in process units, March 1 | 100 | 75% |
| Units started into production | 1,000 | |
| Work in process units, March 31 | 60 | 25% |

| Cost Data—Tricycles | |
|---|---|
| Work in process, March 1 | $ 6,125 |
| Direct materials | 30,000 |
| Direct labor | 14,300 |
| Manufacturing overhead | 20,000 |

### Instructions

**a.** Calculate the following for both the bicycles and the tricycles.

**1.** The equivalent units of production for materials and conversion costs.

**2.** The unit costs of production for materials and conversion costs.

**3.** The assignment of costs to units transferred out and in process at the end of the accounting period.

**b.** Prepare a production cost report for the month of March for the bicycles only.

a. Bicycles:
1. Materials 1,000
2. Materials $50
3. Transferred out $102,380
WIP $ 22,800

## Continuing Cases

### Current Designs

**CD21** Building a kayak using the composite method is a very labor-intensive process. In the Fabrication Department, the kayaks go through several steps as employees carefully place layers of Kevlar® in a mold and then use resin to fuse together the layers. The excess resin is removed with a vacuum process, and the upper shell and lower shell are removed from the molds and assembled. The seat, hatch, and other components are added in the Finishing Department.

At the beginning of April, **Current Designs** had 30 kayaks in process in the Fabrication Department. Rick Thrune, the production manager, estimated that about 80% of the materials costs had been added to these boats, which were about 50% complete with respect to the conversion costs. The cost of this inventory had been calculated to be $8,400 in materials and $9,000 in conversion costs.

During April, 72 boats were started. At the end of the month, the 35 kayaks in the ending inventory had 20% of the materials and 40% of the conversion costs already added to them.

A review of the accounting records for April showed that materials with a cost of $17,500 had been requisitioned by the Fabrication Department and that the conversion costs for the month were $39,600.

#### Instructions

Complete a production cost report for April 2020 for the Fabrication Department using the weighted-average method.

### Waterways

(*Note:* This is a continuation of the Waterways case from Chapters 19–20.)

**WP21** Because most of the parts for its irrigation systems are standard, Waterways handles the majority of its manufacturing as a process cost system. There are multiple process departments. Three of these departments are the Molding, Cutting, and Welding Departments. All items eventually end up in the Packaging Department, which prepares items for sale in kits or individually. This problem asks you to help Waterways calculate equivalent units and prepare a production cost report.

*Go to* **WileyPLUS** *for complete case details and instructions.*

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# Expand Your Critical Thinking

## Decision-Making Across the Organization

**CT21.1** Florida Beach Company manufactures sunscreen, called NoTan, in 11-ounce plastic bottles. NoTan is sold in a competitive market. As a result, management is very cost-conscious. NoTan is manufactured through two processes: mixing and filling. Materials are entered at the beginning of each process, and labor and manufacturing overhead occur uniformly throughout each process. Unit costs are based on the cost per gallon of NoTan using the weighted-average costing approach.

On June 30, 2020, Mary Ritzman, the chief accountant for the past 20 years, opted to take early retirement. Her replacement, Joe Benili, had extensive accounting experience with motels in the area but only limited contact with manufacturing accounting. During July, Joe correctly accumulated the following production quantity and cost data for the Mixing Department.

*Production quantities:* Work in process, July 1, 8,000 gallons 75% complete; started into production 100,000 gallons; work in process, July 31, 5,000 gallons 20% complete. Materials are added at the beginning of the process.

*Production costs:* Beginning work in process $88,000, comprised of $21,000 of materials costs and $67,000 of conversion costs; incurred in July: materials $573,000, conversion costs $765,000.

Joe then prepared a production cost report on the basis of physical units started into production. His report showed a production cost of $14.26 per gallon of NoTan. The management of Florida Beach was surprised at the high unit cost. The president comes to you, as Mary's top assistant, to review Joe's report and prepare a correct report if necessary.

### Instructions

With the class divided into groups, answer the following questions.

**a.** Show how Joe arrived at the unit cost of $14.26 per gallon of NoTan.

**b.** What error(s) did Joe make in preparing his production cost report?

**c.** Prepare a correct production cost report for July.

## Managerial Analysis

**CT21.2** Harris Furniture Company manufactures living room furniture through two departments: Framing and Upholstering. Materials are entered at the beginning of each process. For May, the following cost data are obtained from the two work in process accounts.

| | Framing | Upholstering |
|---|---|---|
| Work in process, May 1 | $ –0– | $ ? |
| Materials | 450,000 | ? |
| Conversion costs | 261,000 | 330,000 |
| Costs transferred in | –0– | 600,000 |
| Costs transferred out | 600,000 | ? |
| Work in process, May 31 | 111,000 | ? |

### Instructions

Answer the following questions.

**a.** If 3,000 sofas were started into production on May 1 and 2,500 sofas were transferred to Upholstering, what was the unit cost of materials for May in the Framing Department?

**b.** Using the data in (a) above, what was the per unit conversion cost of the sofas transferred to Upholstering?

**c.** Continuing the assumptions in (a) above, what is the percentage of completion of the units in process at May 31 in the Framing Department?

## Real-World Focus

**CT21.3** Paintball is now played around the world. The process of making paintballs is actually quite similar to the process used to make certain medical pills. In fact, paintballs were previously often made at the same factories that made pharmaceuticals.

### Instructions

Do an Internet search on "video of paintball production," view that video, and then answer the following questions.

**a.** Describe in sequence the primary steps used to manufacture paintballs.

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**b.** Explain the costs incurred by the company that would fall into each of the following categories: materials, labor, and overhead. Of these categories, which do you think would be the greatest cost in making paintballs?

**c.** Discuss whether a paintball manufacturer would use job order costing or process costing.

## Communication Activity

**CT21.4** Diane Barone was a good friend of yours in high school and is from your home town. While you chose to major in accounting when you both went away to college, she majored in marketing and management. You are now the accounting manager for the Snack Foods Division of Melton Enterprises. Your friend Diane was promoted to regional sales manager for the same division of Melton. Diane recently telephoned you. She explained that she was familiar with job cost sheets, which had been used by the Special Projects Division where she had formerly worked. She was, however, very uncomfortable with the production cost reports prepared by your division. She emailed you a list of her particular questions:

1. Since Melton occasionally prepares snack foods for special orders in the Snack Foods Division, why don't we track costs of the orders separately?
2. What is an equivalent unit?
3. Why am I getting four production cost reports? Isn't there one work in process account?

### Instructions

Prepare a memo to Diane. Answer her questions and include any additional information you think would be helpful. You may write informally but do use proper grammar and punctuation.

## Ethics Case

**CT21.5** R. B. Dillman Company manufactures a high-tech component used in Bluetooth speakers that passes through two production processing departments, Molding and Assembly. Department managers are partially compensated on the basis of units of product completed and transferred out relative to units of product put into production. This was intended as encouragement to be efficient and to minimize waste.

Jan Wooten is the department head in the Molding Department, and Tony Ferneti is her quality control inspector. During the month of June, Jan hired three new employees who were not yet technically skilled. As a result, many of the units produced in June had minor molding defects. In order to maintain the department's normal high rate of completion, Jan told Tony to pass through inspection and on to the Assembly Department all units that had defects nondetectable to the human eye. "Company and industry tolerances on this product are too high anyway," says Jan. "Less than 2% of the units we produce are subjected in the market to the stress tolerance we've designed into them. The odds of those 2% being any of this month's units are even less. Anyway, we're saving the company money."

### Instructions

**a.** Who are the potential stakeholders involved in this situation?

**b.** What alternatives does Tony have in this situation? What might the company do to prevent this situation from occurring?

## Considering People, Planet, and Profit

**CT21.6** In a recent year, an oil refinery in Texas City, Texas, on the Houston Ship Channel exploded. The explosion killed 14 people and sent a plume of smoke hundreds of feet into the air. The blast started as a fire in the section of the plant that increased the octane of the gasoline that was produced at the refinery. The Houston Ship Channel is the main waterway that allows commerce to flow from the Gulf of Mexico into Houston.

The Texas Commission on Environmental Quality expressed concern about the release of nitrogen oxides, benzene, and other known carcinogens as a result of the blast. Neighbors of the plant complained that the plant had been emitting carcinogens for years and that the regulators had ignored their complaints about emissions and unsafe working conditions.

### Instructions

Answer the following questions.

**a.** Outline the costs that the company now faces as a result of the accident.

**b.** How could the company have reduced the costs associated with the accident?

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# Cost-Volume-Profit

## Chapter Preview

As the following Feature Story indicates, to manage any size business you must understand how costs respond to changes in sales volume and the effect of costs and revenues on profits. A prerequisite to understanding cost-volume-profit (CVP) relationships is knowledge of how costs behave. In this chapter, we first explain the considerations involved in cost behavior analysis. Then, we discuss and illustrate CVP analysis.

## Feature Story

### Don't Worry—Just Get Big

It wasn't that Jeff didn't have a good job. He was a vice president at a Wall Street firm. But, despite his good position, he quit his job, moved to Seattle, and started an online retailer, which he named **Amazon.com**. Like any good entrepreneur, Jeff Bezos strove to keep his initial investment small. Operations were run out of his garage. And, to avoid the need for a warehouse, he took orders for books and had them shipped from other distributors' warehouses.

By its fourth month, Amazon was selling 100 books a day. In its first full year, it had $15.7 million in sales. The next year, sales increased eightfold. Two years later, sales were $1.6 billion.

Although its sales growth was impressive, Amazon's ability to lose money was equally amazing. One analyst nicknamed it *Amazon.bomb*, while another, predicting its demise, called it *Amazon.toast*. Why was it losing money? The company used every available dollar to reinvest in itself. It built massive warehouses and bought increasingly sophisticated (and expensive) computers and equipment to improve its distribution system. This desire to grow as fast as possible was captured in a T-shirt

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slogan at its company picnic, which read "Eat another hot dog, get big fast." This buying binge was increasing the company's fixed costs at a rate that exceeded its sales growth. Skeptics predicted that Amazon would soon run out of cash. It didn't.

At the end of one year, even as it announced record profits, Amazon's share price fell by 9%. Why? Because although the company was predicting that its sales revenue in the next quarter would increase by at least 28%, it predicted that its operating profit would fall by at least 2% and perhaps by as much as 34%. The company made no apologies. It explained that it was in the process of expanding from 39 distribution centers to 52. As Amazon's finance chief noted, "You're not as productive on those assets for some time. I'm very pleased with the investments we're making and we've shown over our history that we've been able to make great returns on the capital we invest in." In other words, eat another hot dog.

**Sources:** Christine Frey and John Cook, "How Amazon.com Survived, Thrived and Turned a Profit," *Seattle Post* (January 28, 2008); Stu Woo, "Sticker Shock Over Amazon Growth," *Wall Street Journal* (January 28, 2011); and Miriam Guttfried, "Amazon's Never-Ending Story," *Wall Street Journal* (April 25, 2014).

**Video** **Watch the *Southwest Airlines* video in WileyPLUS to learn more about cost-volume-profit analysis in the real world.**

## Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Explain variable, fixed, and mixed costs and the relevant range. | • Variable costs<br>• Fixed costs<br>• Relevant range<br>• Mixed costs | **DO IT! 1** Types of Costs |
| **LO 2** Apply the high-low method to determine the components of mixed costs. | • High-low method<br>• Identifying variable and fixed costs | **DO IT! 2** High-Low Method |
| **LO 3** Prepare a CVP income statement to determine contribution margin. | • Basic components<br>• CVP income statement | **DO IT! 3** CVP Income Statement |
| **LO 4** Compute the break-even point using three approaches. | • Mathematical equation<br>• Contribution margin technique<br>• Graphic presentation | **DO IT! 4** Break-Even Analysis |
| **LO 5** Determine the sales required to earn target net income and determine margin of safety. | • Target net income<br>• Margin of safety | **DO IT! 5** Break-Even, Margin of Safety, and Target Net Income |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with Orion for additional tutorials and practice opportunities.**

# Cost Behavior Analysis

**LEARNING OBJECTIVE 1**

Explain variable, fixed, and mixed costs and the relevant range.

**Cost behavior analysis** is the study of how specific costs respond to changes in the level of business activity. As you might expect, some costs change when activity changes and others remain the same. For example, for an airline company such as **Southwest** or **United**, the longer

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the flight, the higher the fuel costs. On the other hand, **Massachusetts General Hospital**'s costs to staff the emergency room on any given night are relatively constant regardless of the number of patients treated. A knowledge of cost behavior helps management plan operations and decide between alternative courses of action. Cost behavior analysis applies to all types of entities.

The starting point in cost behavior analysis is measuring the key business activities. Activity levels may be expressed in terms of sales dollars (in a retail company), miles driven (in a trucking company), room occupancy (in a hotel), or dance classes taught (by a dance studio). Many companies use more than one measurement base. A manufacturer, for example, may use direct labor hours or units of output for manufacturing costs, and sales revenue or units sold for selling expenses.

For an activity level to be useful in cost behavior analysis, changes in the level or volume of activity should be correlated with changes in costs. The activity level selected is referred to as the activity index or driver. The **activity index** identifies the activity that causes changes in the behavior of costs. With an appropriate activity index, companies can classify the behavior of costs in response to changes in activity levels into three categories: variable, fixed, or mixed.

## Variable Costs

**Variable costs** are costs that vary **in total** directly and proportionately with changes in the activity level. If the level increases 10%, total variable costs will increase 10%. If the level of activity decreases by 25%, variable costs will decrease 25%. Examples of variable costs include direct materials and direct labor for a manufacturer; cost of goods sold, sales commissions, and freight-out for a merchandiser; and gasoline in airline and trucking companies. A variable cost may also be defined as a cost that **remains the same *per unit* at every level of activity**.

To illustrate the behavior of a variable cost, assume that Damon Company manufactures tablet computers that contain cameras that cost $10. The activity index is the number of tablet computers produced. As Damon manufactures each tablet, the total cost of cameras installed in tablets increases by $10. As part (a) of **Illustration 22.1** shows, total cost of the cameras will be $20,000 (2,000 × $10) if Damon produces 2,000 tablets, and $100,000 when it produces 10,000 tablets. We also can see that a variable cost remains the same per unit as the level of activity changes. As part (b) of Illustration 22.1 shows, the unit cost of $10 for the cameras is the same whether Damon produces 2,000 or 10,000 tablets.

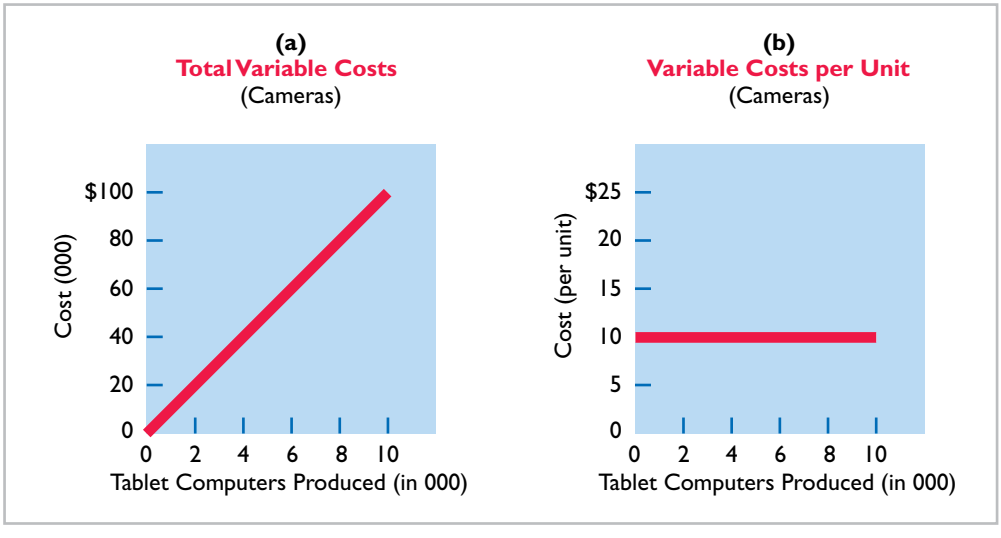


**ILLUSTRATION 22.1**
**Behavior of total and unit variable costs; variable costs per unit remain constant**

Companies that rely heavily on labor either to manufacture a product or perform a service, such as **Hilton** or **Marriott**, are likely to have a high percentage of variable costs. In contrast, companies that use a high proportion of machinery and equipment in producing revenue, such as **AT&T** or **Duke Energy Co.**, may have a lower percentage of variable costs.

## Fixed Costs

**Fixed costs** are costs that **remain the same in total** regardless of changes in the activity level. Examples include property taxes, insurance, rent, supervisory salaries, and depreciation

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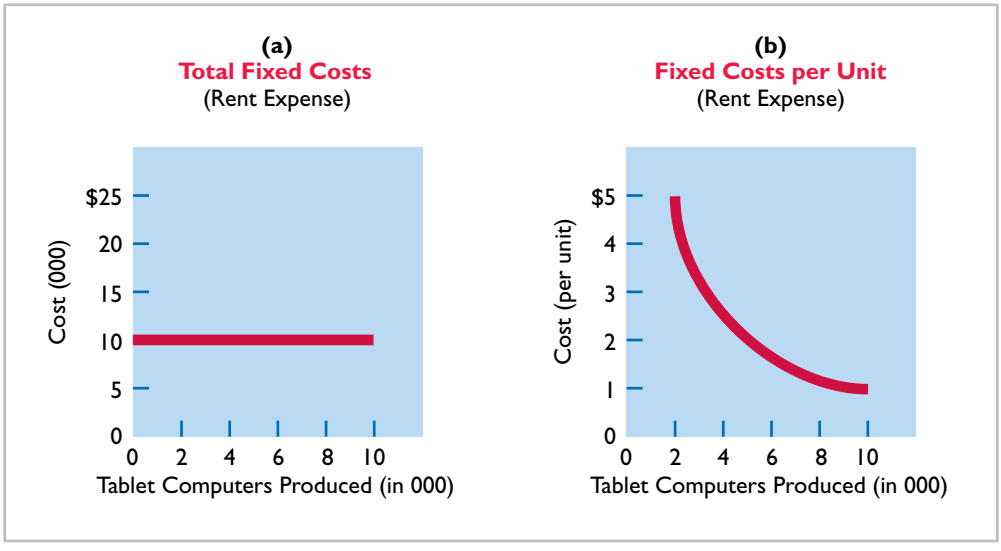
on buildings and equipment. Because total fixed costs remain constant as activity changes, it follows that **fixed costs *per unit* vary inversely with activity: As volume increases, unit cost declines, and vice versa**.

To illustrate the behavior of fixed costs, assume that Damon Company leases its productive facilities at a cost of $10,000 per month. Total fixed costs of the facilities remain a constant $10,000 at every level of activity, as part (a) of **Illustration 22.2** shows. But, **on a per unit basis, the cost of rent declines as activity increases**, as part (b) of Illustration 22.2 shows. At 2,000 units, the unit cost per tablet computer is $5 ($10,000 ÷ 2,000). When Damon produces 10,000 tablets, the unit cost of the rent is only $1 per tablet ($10,000 ÷ 10,000).

**ILLUSTRATION 22.2**

**Behavior of total and unit fixed costs**




The trend for many manufacturers is to have more fixed costs and fewer variable costs. This trend is the result of increased use of automation and less use of employee labor. As a result, depreciation and lease charges (fixed costs) increase, whereas direct labor costs (variable costs) decrease.

## People, Planet, and Profit Insight BrightFarms

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### Gardens in the Sky

Because of population increases, the United Nations' Food and Agriculture Organization estimates that food production will need to increase by 70% by 2050. Also, by 2050, roughly 70% of people will live in cities, which means more food needs to be hauled further to get it to the consumer. To address the lack of farmable land and reduce the cost of transporting produce, some companies, such as New York-based **BrightFarms**, are building urban greenhouses.

This sounds great, but do the numbers work? Some variable costs would be reduced. For example, the use of pesticides, herbicides, fuel costs for shipping, and water would all drop. Soil erosion would be a non-issue since plants would be grown hydroponically (in a solution of water and minerals), and land requirements would be reduced because of vertical structures. But, other costs would be higher. First, there is the cost of the building. Also, any multistory building would require artificial lighting for plants on lower floors.

Until these cost challenges can be overcome, it appears that these urban greenhouses may not break even. On the other hand, rooftop greenhouses on existing city structures already appear financially viable. For example, a 15,000 square-foot rooftop greenhouse in Brooklyn already produces roughly 30 tons of vegetables per year for local residents.

**Sources:** "Vertical Farming: Does It Really Stack Up?" *The Economist* (December 9, 2010); and Jane Black, "BrightFarms Idea: Greenhouses That Cut Short the Path from Plant to Grocery Shelf," *The Washington Post* (May 7, 2013).

**What are some of the variable and fixed costs that are impacted by hydroponic farming? (Go to WileyPLUS for this answer and additional questions.)**

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## Relevant Range

In Illustration 22.1 part (a), a straight line is drawn throughout the entire range of the activity index for total variable costs. In essence, the assumption is that the costs are **linear**. If a relationship is linear (that is, straight-line), then changes in the activity index will result in a direct, proportional change in the total variable cost. For example, if the activity level doubles, the cost doubles.

It is now necessary to ask: Is the straight-line relationship realistic? In most business situations, a straight-line relationship **does not exist** for variable costs throughout the entire range of possible activity. At abnormally low levels of activity, it may be impossible to be cost-efficient. Small-scale operations may not allow the company to obtain quantity discounts for raw materials or to use specialized labor. In contrast, at abnormally high levels of activity, labor costs may increase sharply because of overtime pay. Also, at high activity levels, materials costs may jump significantly because of excess spoilage caused by worker fatigue.

As a result, in the real world, the relationship between the behavior of a variable cost and changes in the activity level is often **curvilinear**, as shown in part (a) of **Illustration 22.3**. In the curved sections of the line, a change in the activity index will not result in a direct, proportional change in the variable cost. That is, a doubling of the activity index will not result in an exact doubling of the variable cost. The variable cost may more than double, or it may be less than double.

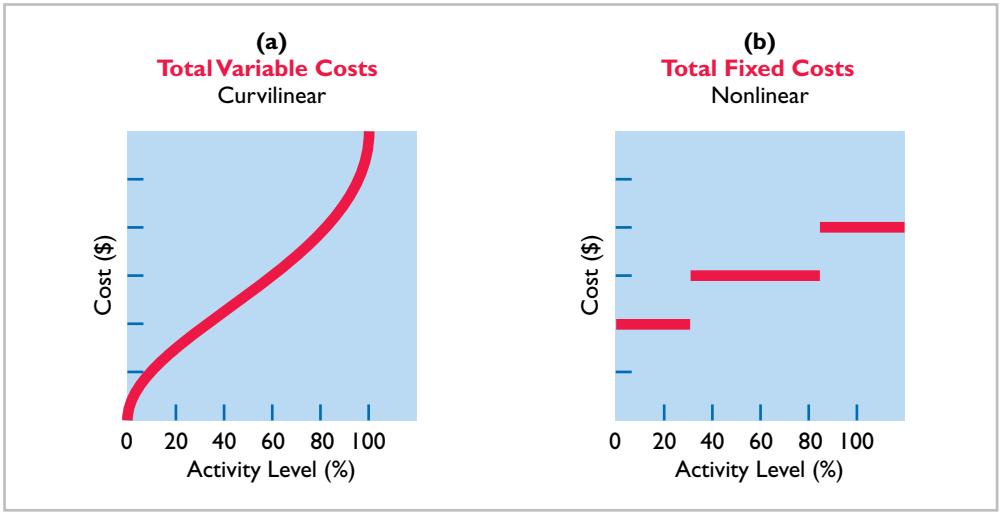


**ILLUSTRATION 22.3**
**Nonlinear behavior of variable and fixed costs**

Total fixed costs also do not have a straight-line relationship over the entire range of activity. Some fixed costs will not change. But it is possible for management to change other fixed costs (see **Helpful Hint**). For example, in some instances, salaried employees (fixed) are replaced with freelance workers (variable). Some costs are step costs. For example, once a company exceeds certain levels of activity, it may have to add an additional warehouse. Illustration 22.3, part (b), shows an example of step-cost behavior of total fixed costs through all potential levels of activity.

For most companies, operating at almost zero or at 100% capacity is the exception rather than the rule. Instead, companies often operate over a somewhat narrower range, such as 40–80% of capacity. The range over which a company expects to operate during a year is called the **relevant range** of the activity index (see **Alternative Terminology**). Within the relevant range, as both diagrams in **Illustration 22.4** show, a straight-line relationship generally exists for both variable and fixed costs between 40 and 80% of capacity.

**HELPFUL HINT**
Fixed costs that may be changed by managers include research, such as new product development, and management training programs.

**ALTERNATIVE TERMINOLOGY**
The relevant range is also called the *normal* or *practical range*.

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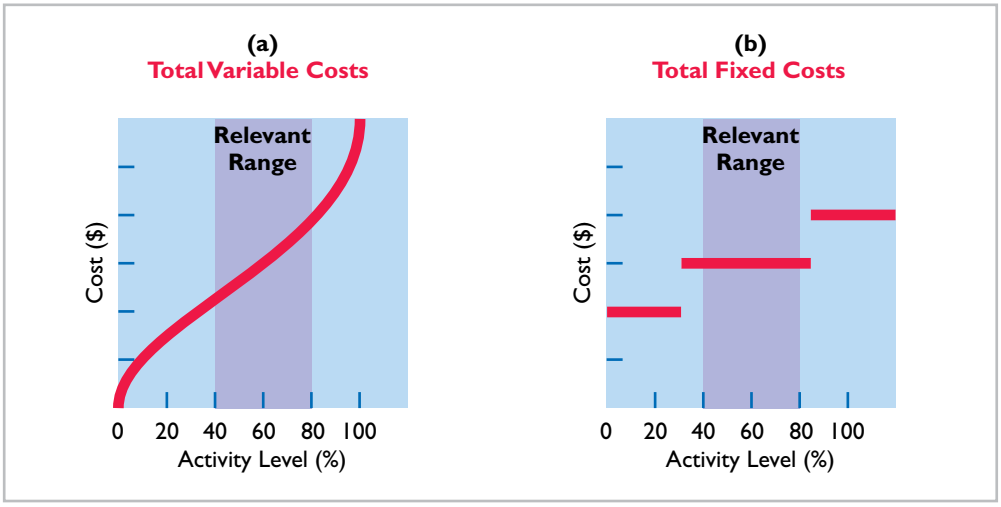
**ILLUSTRATION 22.4**
**Linear behavior within relevant range**



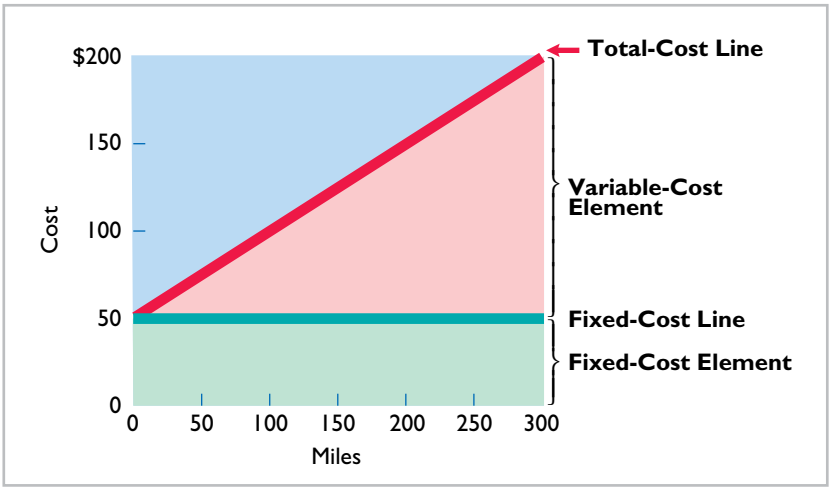

As you can see, although the linear (straight-line) relationship may not be completely realistic, **the linear assumption produces useful data for CVP analysis as long as the level of activity remains within the relevant range**.

## Mixed Costs

**Mixed costs** are costs that contain both a variable- and a fixed-cost element. **Mixed costs, therefore, change in total but not proportionately with changes in the activity level.**

The rental of a **U-Haul** truck is a good example of a mixed cost. Assume that local rental terms for a 17-foot truck, including insurance, are $50 per day plus 50 cents per mile. When determining the cost of a one-day rental, the per day charge is a fixed cost (with respect to miles driven), whereas the mileage charge is a variable cost. The graphic presentation of the rental cost for a one-day rental is shown in **Illustration 22.5**.

**ILLUSTRATION 22.5**
**Behavior of a mixed cost**




In this case, the fixed-cost element is the cost of having the service available. The variable-cost element is the cost of actually using the service (miles driven). Utility costs such as electricity are another example of a mixed cost. Each month the electric bill includes a flat service fee plus a usage charge.

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### DO IT! 1 | Types of Costs

Helena Company reports the following total costs at two levels of production.

| | 10,000 Units | 20,000 Units |
|---|---|---|
| Direct materials | $20,000 | $40,000 |
| Maintenance | 8,000 | 10,000 |
| Direct labor | 17,000 | 34,000 |
| Indirect materials | 1,000 | 2,000 |
| Depreciation | 4,000 | 4,000 |
| Utilities | 3,000 | 5,000 |
| Rent | 6,000 | 6,000 |

Classify each cost as variable, fixed, or mixed.

**ACTION PLAN**

- Recall that a variable cost varies in total directly and proportionately with each change in activity level.
- Recall that a fixed cost remains the same in total with each change in activity level.
- Recall that a mixed cost changes in total but not proportionately with each change in activity level.

**Solution**

Direct materials, direct labor, and indirect materials are variable costs because the total cost doubles with the doubling in activity.
Depreciation and rent are fixed costs because the total cost does not vary with the change in activity.
Maintenance and utilities are mixed costs because the total cost changes, but the change is not proportional to the change in activity.

Related exercise material: **BE22.1, BE22.2, BE22.3, DO IT! 22.1, E22.1, E22.2, E22.4, and E22.6.**

# Mixed Costs Analysis

**LEARNING OBJECTIVE 2**

Apply the high-low method to determine the components of mixed costs.

For purposes of cost-volume-profit analysis, **mixed costs must be classified into their fixed and variable elements**. How does management make the classification? One possibility is to determine the variable and fixed components each time a mixed cost is incurred. But because of time and cost constraints, this approach is rarely followed. Instead, the usual approach is to collect data on the behavior of the mixed costs at various levels of activity. Analysts then identify the fixed- and variable-cost components. Companies use various types of analysis. One type of analysis, called the **high-low method**, is discussed next.

## High-Low Method

The **high-low method** uses the total costs incurred at the high and low levels of activity to classify mixed costs into fixed and variable components. The difference in costs between the high and low levels represents variable costs, since only the variable-cost element can change as activity levels change.

The steps in computing fixed and variable costs under this method are as follows.

1. **Determine variable cost per unit from the formula shown in Illustration 22.6.** This is the slope of the cost function.

| Change in Total Costs at High versus Low Activity Level | ÷ | High minus Low Activity Level | = | Variable Cost per Unit |
|---|---|---|---|---|

**ILLUSTRATION 22.6**
**Formula for variable cost per unit using high-low method**

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To illustrate, assume that Metro Transit Company has the maintenance costs and mileage data for its fleet of buses over a 6-month period shown in Illustration 22.7.

**ILLUSTRATION 22.7**
**Assumed maintenance costs and mileage data**

| Month | Miles Driven | Total Cost | Month | Miles Driven | Total Cost |
|---|---|---|---|---|---|
| January | 20,000 | $30,000 | April | 50,000 | $63,000 |
| February | 40,000 | 48,000 | May | 30,000 | 42,000 |
| March | 35,000 | 49,000 | June | 43,000 | 61,000 |

The high and low levels of activity are 50,000 miles in April and 20,000 miles in January. The maintenance costs at these two levels are $63,000 and $30,000, respectively. The difference in maintenance costs is $33,000 ($63,000 − $30,000), and the difference in miles is 30,000 (50,000 − 20,000). Therefore, for Metro Transit, variable cost per unit is $1.10, computed as follows.

$$\$33{,}000 \div 30{,}000 = \$1.10$$

2. **Determine the total fixed costs by subtracting the total variable costs at either the high or the low activity level from the total cost at that activity level.**

Illustration 22.8 shows the computations for Metro Transit.

**ILLUSTRATION 22.8**
**High-low method computation of fixed costs**

Metro Transit

| | A | B | C | D |
|---|---|---|---|---|
| 1 | Metro Transit | | | |
| 2 | | | Activity Level | |
| 3 | | | High | Low |
| 4 | Total cost | | $63,000 | $30,000 |
| 5 | Less: | Variable costs | | |
| 6 | | 50,000 × $1.10 | 55,000 | |
| 7 | | 20,000 × $1.10 | | 22,000 |
| 8 | Total fixed costs | | $ 8,000 | $ 8,000 |
| 9 | | | | |
| 10 | | | | |

**Maintenance costs are therefore $8,000 per month of fixed costs plus $1.10 per mile of variable costs.** This is represented by the following formula, referred to as the total cost equation.

$$\text{Maintenance costs} = \$8{,}000 + (\$1.10 \times \text{Miles driven})$$

For example, at 45,000 miles, estimated maintenance costs would be $8,000 fixed and $49,500 variable ($1.10 × 45,000) for a total of $57,500.

The graph in Illustration 22.9 plots the 6-month data for Metro Transit Company. The red line drawn in the graph connects the high and low data points (in squares) and therefore represents the equation that we just solved using the high-low method. The red, "high-low" line intersects the y-axis at $8,000 (the fixed-cost level), and it rises by its slope of $1.10 per unit (the variable cost per unit). Note that a completely different line would result if we chose any two of the other data points. That is, by choosing any two other data points, we would end up with a different estimate of fixed costs and a different variable cost per unit. Thus, from this scatter plot, we can see that while the high-low method is simple, the result is rather arbitrary. A better approach, which uses information from all the data points to estimate fixed and variable costs, is called *regression analysis*. A discussion of regression analysis is provided in Appendix 22A as well as in the Excel video available in WileyPLUS.

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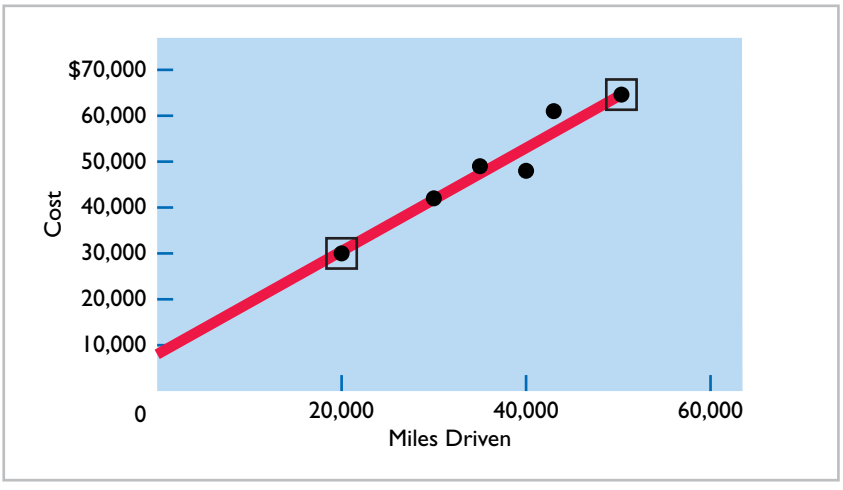


**ILLUSTRATION 22.9**
**Scatter plot for Metro Transit Company**

## Management Insight Kroger Co.

tiero/iStock/Getty Images

### Are Robotic Workers More Humane?

Warehouse distribution centers for large retailers and grocers employ more than 800,000 people in the United States. But many companies, such as grocer **Kroger Co.**, have a hard time finding and retaining warehouse workers. One reason? Studies have shown that some warehouse workers walk up to 20 miles and lift 50,000 pounds during a single day. As a result, as the needs for storage increases and companies are faced with the proposition of building massive new warehouses, some are choosing instead to invest in robotic warehousing systems.

Robots can provide many advantages over their human counterparts. Robots need aisles that are less than 30 inches wide, as opposed to traditional warehouse aisles that are 10 to 12 feet wide. Moving at speeds of up to 25 miles per hour, robots can drop off and retrieve warehouse cases about five times as fast as a human. Robotic systems cut labor costs by about 80%, and they cut warehouse size anywhere from 25% to 40%. However, a fully automated system costs between $40 to $80 million, so the switch to robotic systems is not a trivial decision.

**Source:** Robbie Whelan, "Fully Autonomous Robots: The Warehouse Workers of the Near Future," *Wall Street Journal* (September 20, 2016).

**How would a company's variable and fixed costs change if it adopts a robotic system? (Go to WileyPLUS for this answer and additional questions).**

# Importance of Identifying Variable and Fixed Costs

Why is it important to segregate mixed costs into variable and fixed elements? The answer may become apparent if we look at the following four business decisions.

1. If **American Airlines** is to make a profit when it reduces all domestic fares by 30%, what reduction in costs or increase in passengers will be required?
   **Answer**: To make a profit when it cuts domestic fares by 30%, American Airlines will have to increase the number of passengers or cut its variable costs for those flights. Its fixed costs will not change.
2. If **Ford Motor Company** meets workers' demands for higher wages, what increase in sales revenue will be needed to maintain current profit levels?
   **Answer**: Higher wages at Ford Motor Company will increase the variable costs of manufacturing automobiles. To maintain present profit levels, Ford will have to cut other variable or fixed costs, sell more automobiles, or increase the price of its automobiles.
3. If **United States Steel Corp.**'s program to modernize plant facilities through significant equipment purchases reduces the work force by 50%, what will be the effect on the cost of producing one ton of steel?

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**Answer**: The modernizing of plant facilities at United States Steel Corp. changes the proportion of fixed and variable costs of producing one ton of steel. Fixed costs increase because of higher depreciation charges, whereas variable costs decrease due to the reduction in the number of steelworkers.

4. What happens if **Kellogg's** increases its advertising expenses but cannot increase prices because of competitive pressure?
**Answer**: Sales volume must be increased to cover the increase in fixed advertising costs.

### DO IT! 2 | High-Low Method

Byrnes Company accumulates the following data concerning a mixed cost, using units produced as the activity level.

| | Units Produced | Total Cost |
|---|---|---|
| March | 9,800 | $14,740 |
| April | 8,500 | 13,250 |
| May | 7,000 | 11,100 |
| June | 7,600 | 12,000 |
| July | 8,100 | 12,460 |

**a.** Compute the variable-cost and fixed-cost elements using the high-low method.

**b.** Using the information from your answer to part (a), write the cost formula.

**c.** Estimate the total cost if the company produces 8,000 units.

**ACTION PLAN**

- Determine the highest and lowest levels of activity.
- Compute variable cost per unit as Change in total costs ÷ (High − low activity level) = Variable cost per unit.
- Compute fixed cost as Total cost − (Variable cost per unit × Units produced) = Total fixed cost.

**Solution**

**a.** Variable cost: ($14,740 − $11,100) ÷ (9,800 − 7,000) = $1.30 per unit
Fixed cost: $14,740 − ($1.30 × 9,800 units) = $2,000
or $11,100 − ($1.30 × 7,000 units) = $2,000

**b.** Cost = $2,000 + ($1.30 × units produced)

**c.** Total cost to produce 8,000 units: $2,000 + $10,400 ($1.30 × 8,000 units) = $12,400

Related exercise material: **BE22.4, BE22.5, DO IT! 22.2, E22.3, and E22.5.**

# Cost-Volume-Profit Analysis

**LEARNING OBJECTIVE 3**

Prepare a CVP income statement to determine contribution margin.

**Cost-volume-profit (CVP) analysis** is the study of the effects of changes in costs and volume on a company's profits. CVP analysis is important in profit planning. It also is a critical factor in such management decisions as setting selling prices, determining product mix, and maximizing use of production facilities.

## Basic Components

CVP analysis considers the interrelationships among the components shown in **Illustration 22.10**.

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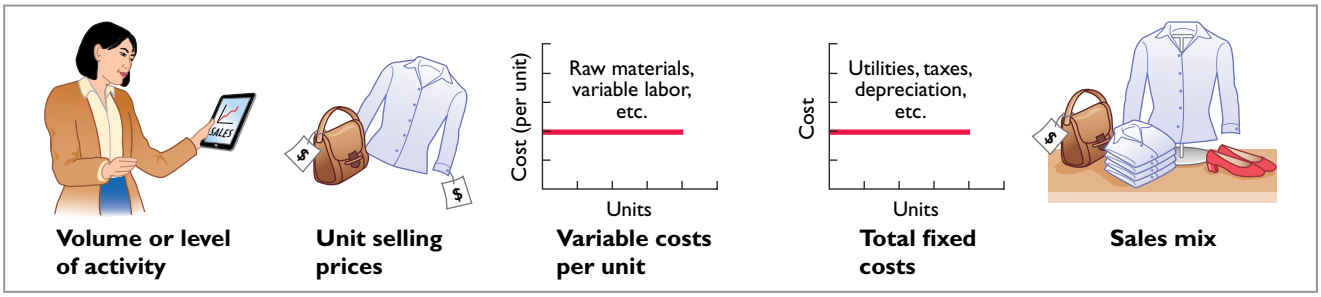
**ILLUSTRATION 22.10** **Components of CVP analysis**




**Volume or level of activity** | **Unit selling prices** | **Variable costs per unit** | **Total fixed costs** | **Sales mix**

The following assumptions underlie each CVP analysis.

1. The behavior of both costs and revenues is linear throughout the relevant range of the activity index.
2. Costs can be classified accurately as either variable or fixed.
3. Changes in activity are the only factors that affect costs.
4. All units produced are sold.
5. When more than one type of product is sold, the sales mix will remain constant. That is, the percentage that each product represents of total sales will stay the same. Sales mix complicates CVP analysis because different products will have different cost relationships. In this chapter, we assume a single product.

When these assumptions are not valid, the CVP analysis may be inaccurate.

## CVP Income Statement

Because CVP is so important for decision-making, management often wants this information reported in a **cost-volume-profit (CVP) income statement** format for internal use. The CVP income statement classifies costs as variable or fixed and computes a contribution margin. **Contribution margin (CM)** is the amount of revenue remaining after deducting variable costs. It is often stated both as a total amount and on a per unit basis.

We use Vargo Electronics Company to illustrate a CVP income statement. Vargo Electronics produces cell phones. **Illustration 22.11** presents relevant data for the cell phones sold by this company in June 2020.

**ILLUSTRATION 22.11**
**Assumed selling and cost data for Vargo Electronics**

| | |
|---|---|
| Unit selling price of cell phone | $500 |
| Unit variable costs* | $300 |
| Total monthly fixed costs** | $200,000 |
| Units sold | 1,600 |

*Includes variable manufacturing costs and variable selling and administrative expenses.
**Includes fixed manufacturing costs and fixed selling and administrative expenses.

Note that in Illustration 22.11, as well as in the applications and assignment material of CVP analysis that follow, **we assume that the term "cost" includes all costs and expenses related to production and sale of the product. That is, cost includes manufacturing costs plus selling and administrative expenses.**

The CVP income statement for Vargo would therefore be reported as shown in **Illustration 22.12**.

A traditional income statement and a CVP income statement both report the same net income of $120,000. However, a traditional income statement does not classify costs as variable or fixed, and therefore it does not report a contribution margin. In addition, sometimes per unit amounts and percentage of sales amounts are shown in separate columns on a CVP income statement to facilitate CVP analysis. *Homework assignments specify which columns to present.*

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**ILLUSTRATION 22.12**
**CVP income statement, with net income**

**Vargo Electronics Company**
**CVP Income Statement**
**For the Month Ended June 30, 2020**

| | Total |
|---|---|
| Sales (1,600 × $500) | $800,000 |
| Variable costs (1,600 × $300) | 480,000 |
| **Contribution margin** | **320,000** |
| Fixed costs | 200,000 |
| **Net income** | **$120,000** |

## Unit Contribution Margin

**Illustration 22.13** shows the formula for **unit contribution margin** and the computation for Vargo Electronics.

**ILLUSTRATION 22.13**
**Formula for unit contribution margin**

| Unit Selling Price | – | Unit Variable Costs | = | Unit Contribution Margin |
|---|---|---|---|---|
| $500 | – | $300 | = | $200 |

Unit contribution margin indicates that for every cell phone sold, the selling price exceeds the variable costs by $200. Vargo generates $200 per unit sold to cover fixed costs and contribute to net income. Because Vargo has fixed costs of $200,000, it must sell 1,000 cell phones ($200,000 ÷ $200) to cover its fixed costs.

At the point where total contribution margin exactly equals fixed costs, Vargo will report net income of zero. At this point, referred to as the **break-even point**, total costs (variable plus fixed) exactly equal total revenue. **Illustration 22.14** shows Vargo's CVP income statement at the point where net income equals zero. It shows a contribution margin of $200,000, and a unit contribution margin of $200 ($500 – $300).

**ILLUSTRATION 22.14**
**CVP income statement, with zero net income**

**Vargo Electronics Company**
**CVP Income Statement**
**For the Month Ended June 30, 2020**

| | Total | Per Unit |
|---|---|---|
| Sales (1,000 × $500) | $500,000 | $500 |
| Variable costs (1,000 × $300) | 300,000 | 300 |
| **Contribution margin** | **200,000** | **$200** |
| Fixed costs | 200,000 | |
| **Net income** | **$ –0–** | |

It follows that for every cell phone sold above the break-even point of 1,000 units, **net income increases by the amount of the unit contribution margin, $200**. For example, assume that Vargo sold one more cell phone, for a total of 1,001 cell phones sold. In this case, Vargo reports net income of $200, as shown in **Illustration 22.15**.

**ILLUSTRATION 22.15**
**CVP income statement, with net income and per unit data**

**Vargo Electronics Company**
**CVP Income Statement**
**For the Month Ended June 30, 2020**

| | Total | Per Unit |
|---|---|---|
| Sales (1,001 × $500) | $500,500 | $500 |
| Variable costs (1,001 × $300) | 300,300 | 300 |
| **Contribution margin** | **200,200** | **$200** |
| Fixed costs | 200,000 | |
| **Net income** | **$ 200** | |

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## Contribution Margin Ratio

Some managers prefer to use a contribution margin ratio in CVP analysis. The contribution margin ratio is the contribution margin expressed as a percentage of sales. Vargo Electronics has a contribution margin ratio of 40% (contribution margin of $200,200 divided by sales of $500,500), as shown in the percent of sales column in **Illustration 22.16**.

**Vargo Electronics Company**
**CVP Income Statement**
**For the Month Ended June 30, 2020**

| | Total | Percent of Sales |
|---|---|---|
| Sales (1,000 × $500) | $500,500 | 100% |
| Variable costs (1,000 × $300) | 300,300 | 60 |
| **Contribution margin** | **200,200** | **40%** |
| Fixed costs | 200,000 | |
| **Net income** | **$ 200** | |

**ILLUSTRATION 22.16** **CVP income statement, with net income and percent of sales data**

Alternatively, the **contribution margin ratio** can be determined by dividing the unit contribution margin by the unit selling price. **Illustration 22.17** shows the ratio for Vargo Electronics.

| Unit Contribution Margin | ÷ | Unit Selling Price | = | Contribution Margin Ratio |
|---|---|---|---|---|
| $200 | ÷ | $500 | = | 40% |

**ILLUSTRATION 22.17** **Formula for contribution margin ratio**

The contribution margin ratio of 40% means that Vargo generates 40 cents of contribution margin with each dollar of sales. That is, $0.40 of each sales dollar (40% × $1) is available to apply to fixed costs and to contribute to net income.

This expression of contribution margin is very helpful in determining the effect of changes in sales on net income. For example, if Vargo's sales increase $100,000, net income will increase $40,000 (40% × $100,000). Thus, by using the contribution margin ratio, managers can quickly determine increases in net income from any change in sales.

We can also see this effect through a CVP income statement. Assume that Vargo's current sales are $500,000 and it wants to know the effect of a $100,000 (200-unit) increase in sales. Vargo prepares the comparative CVP income statement analysis shown in **Illustration 22.18**.

**ILLUSTRATION 22.18** **Comparative CVP income statements**

**Vargo Electronics Company**
**CVP Income Statement**
**For the Month Ended June 30, 2020**

| | No Change | | | With $100,000 Increase in Sales | | |
|---|---|---|---|---|---|---|
| | Total | Per Unit | Percent of Sales | Total | Per Unit | Percent of Sales |
| Sales | $500,000 | $500 | 100% | $600,000 | $500 | 100% |
| Variable costs | 300,000 | 300 | 60 | 360,000 | 300 | 60 |
| **Contribution margin** | **200,000** | **$200** | **40%** | **240,000** | **$200** | **40%** |
| Fixed costs | 200,000 | | | 200,000 | | |
| **Net income** | **$ –0–** | | | **$ 40,000** | | |

The $40,000 increase in net income can be calculated on either a unit contribution margin basis (200 units × $200 per unit) or using the contribution margin ratio times the increase in sales dollars (40% × $100,000). Note that the unit contribution margin and contribution

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margin as a percentage of sales (that is, the contribution margin ratio) remain unchanged by the increase in sales.

Study these CVP income statements carefully. The concepts presented in these statements are used extensively in this and later chapters.

### DO IT! 3 | CVP Income Statement

Ampco Industries produces and sells a cell phone-operated thermostat. Information regarding the costs and sales of thermostats during September 2020 are provided below.

| | |
|---|---|
| Unit selling price of thermostat | $85 |
| Unit variable costs | $32 |
| Total monthly fixed costs | $190,000 |
| Units sold | 4,000 |

Prepare a CVP income statement for Ampco Industries for the month of September. Provide per unit values and total values.

**ACTION PLAN**

- Provide a heading with the name of the company, name of statement, and period covered.
- Subtract variable costs from sales to determine contribution margin. Subtract fixed costs from contribution margin to determine net income.
- Express sales, variable costs and contribution margin on a per unit basis.

**Solution**

**Ampco Industries**
**CVP Income Statement**
**For the Month Ended September 30, 2020**

| | Total | Per Unit |
|---|---|---|
| Sales | $340,000 | $85 |
| Variable costs | 128,000 | 32 |
| Contribution margin | 212,000 | $53 |
| Fixed costs | 190,000 | |
| Net income | $ 22,000 | |

Related exercise material: **BE22.6, BE22.7, DO IT! 22.3, and E22.7.**

## Break-Even Analysis

**LEARNING OBJECTIVE 4**

Compute the break-even point using three approaches.

A key relationship in CVP analysis is the level of activity at which total revenues equal total costs (both fixed and variable)—the **break-even point**. At this volume of sales, the company will realize no income but will suffer no loss. The process of finding the break-even point is called **break-even analysis**. Knowledge of the break-even point is useful to management when it considers decisions such as whether to introduce new product lines, change sales prices on established products, or enter new market areas.

The break-even point can be:

1. Computed from a mathematical equation.
2. Computed by using contribution margin.
3. Derived from a cost-volume-profit (CVP) graph.

The break-even point can be expressed either in **sales units** or **sales dollars**.

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# Mathematical Equation

**Illustration 22.19** shows a common profit equation used as the basis for CVP analysis. This equation expresses net income as sales minus variable and fixed costs. Sales is expressed as the unit selling price ($500) times the number of units sold (Q). Variable costs are determined by multiplying the unit variable cost ($300) by the number of units sold (Q). When net income is set to zero, as it is in this illustration, this equation can be used to calculate the break-even point.

| Sales | – | Variable Costs | – | Fixed Costs | = | Net Income |
|---|---|---|---|---|---|---|
| $500Q | – | $300Q | – | $200,000 | = | $0 |

**ILLUSTRATION 22.19**
**Profit equation**

As shown in Illustration 22.14, net income equals zero when the contribution margin (sales minus variable costs) is equal to fixed costs. To reflect this, **Illustration 22.20** rewrites the equation with contribution margin (sales minus variable costs) on the left side, and fixed costs and net income of zero on the right. We can then compute the break-even point **in units** by **using unit selling prices** and **unit variable costs** and solving for the quantity (Q).

| Sales | – | Variable Costs | – | Fixed Costs | = | Net Income |
|---|---|---|---|---|---|---|
| $500Q | – | $300Q | – | $200,000 | = | $0 |
| $500Q | – | $300Q | = | $200,000 | + | $0 |
| $200Q | = | $200,000 | | | | |

$$Q = \frac{\$200,000}{\$200} = \frac{\text{Fixed Costs}}{\text{Unit Contribution Margin}}$$

$$Q = 1,000 \text{ units}$$

where

Q = number of units sold
$500 = unit selling price
$300 = unit variable costs
$200,000 = total fixed costs

**ILLUSTRATION 22.20**
**Computation of break-even point in units**

Thus, Vargo Electronics must sell 1,000 units to break even.

To find the amount of **sales dollars** required to break even, we multiply the units sold at the break-even point times the selling price per unit, as shown below.

$$1,000 \times \$500 = \$500,000 \text{ (break-even sales dollars)}$$

# Contribution Margin Technique

Many managers employ the contribution margin to compute the break-even point.

## Contribution Margin in Units

The final step in Illustration 22.20 divides fixed costs by the unit contribution margin (highlighted in red). Thus, rather than walk through all of the steps of the equation approach, we can simply employ this formula shown in **Illustration 22.21**.

| Fixed Costs | ÷ | Unit Contribution Margin | = | Break-Even Point in Units |
|---|---|---|---|---|
| $200,000 | ÷ | $200 | = | 1,000 units |

**ILLUSTRATION 22.21**
**Formula for break-even point in units using unit contribution margin**

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Why does this formula work? The unit contribution margin is the net amount by which each sale exceeds the variable costs per unit. Every sale generates this much to cover fixed costs. Consequently, if we divide fixed costs by the unit contribution margin, we know how many units we need to sell to break even.

### Contribution Margin Ratio

When a company has numerous products, it is not practical to determine the unit contribution margin for each product. In this case, using the contribution margin ratio is very useful for determining the break-even point in total dollars (rather than units). Recall that the contribution margin ratio is the percentage of each dollar of sales that is available to cover fixed costs and generate net income. Therefore, **to determine the sales dollars needed to cover fixed costs**, we divide fixed costs by the contribution margin ratio, as shown in Illustration 22.22.

**ILLUSTRATION 22.22**
**Formula for break-even point in dollars using contribution margin ratio**

| Fixed Costs | ÷ | Contribution Margin Ratio | = | Break-Even Point in Dollars |
|---|---|---|---|---|
| $200,000 | ÷ | 40% | = | $500,000 |

To apply this formula to Vargo Electronics, consider that its 40% contribution margin ratio means that for every dollar sold, it generates 40 cents of contribution margin. The question is, how many dollars of sales does Vargo need in order to generate total contribution margin of $200,000 to pay off fixed costs? We divide the fixed costs of $200,000 by the 40 cents of contribution margin generated by each dollar of sales to arrive at $500,000 ($200,000 ÷ 40%). To prove this result, if we generate 40 cents of contribution margin for each dollar of sales, then the total contribution margin generated by $500,000 in sales is $200,000 ($500,000 × 40%).

## Service Company Insight Flightserve

Digital Vision/Getty Images

### Charter Flights Offer a Good Deal

The Internet is wringing inefficiencies out of nearly every industry. While commercial aircraft spend roughly 4,000 hours a year in the air, chartered aircraft are flown only 500 hours annually. That means that they are sitting on the ground—not making any money—about 90% of the time.

One company, **Flightserve**, saw a business opportunity in that fact. For about the same cost as a first-class ticket, Flightserve matches up executives with charter flights in small "private jets." The executive gets a more comfortable ride and avoids the hassle of big airports. Flightserve noted that the average charter jet has eight seats. When all eight seats are full, the company has an 80% profit margin. It breaks even at an average of 3.3 full seats per flight. Another company, **NetJets**, uses an alternative approach to increase utilization of jets and thus reduce fixed costs. It offers shared ownership in private jets.

**Sources:** "Jet Set Go," *The Economist* (March 18, 2000), p. 68; and Doug Gollan, "How NetJets' Private Jet Service Is Making Itself Whole Again," *Forbes* (June 3, 2015).

**How did Flightserve determine that it would break even with 3.3 seats full per flight? (Go to WileyPLUS for this answer and additional questions.)**

# Graphic Presentation

An effective way to find the break-even point is to prepare a break-even graph. Because this graph also shows costs, volume, and profits, it is referred to as a **cost-volume-profit (CVP) graph**.

As the CVP graph in Illustration 22.23 shows, sales volume is recorded along the horizontal axis. This axis should extend to the maximum level of expected sales. Both total revenues (sales) and total costs (fixed plus variable) are recorded on the vertical axis.

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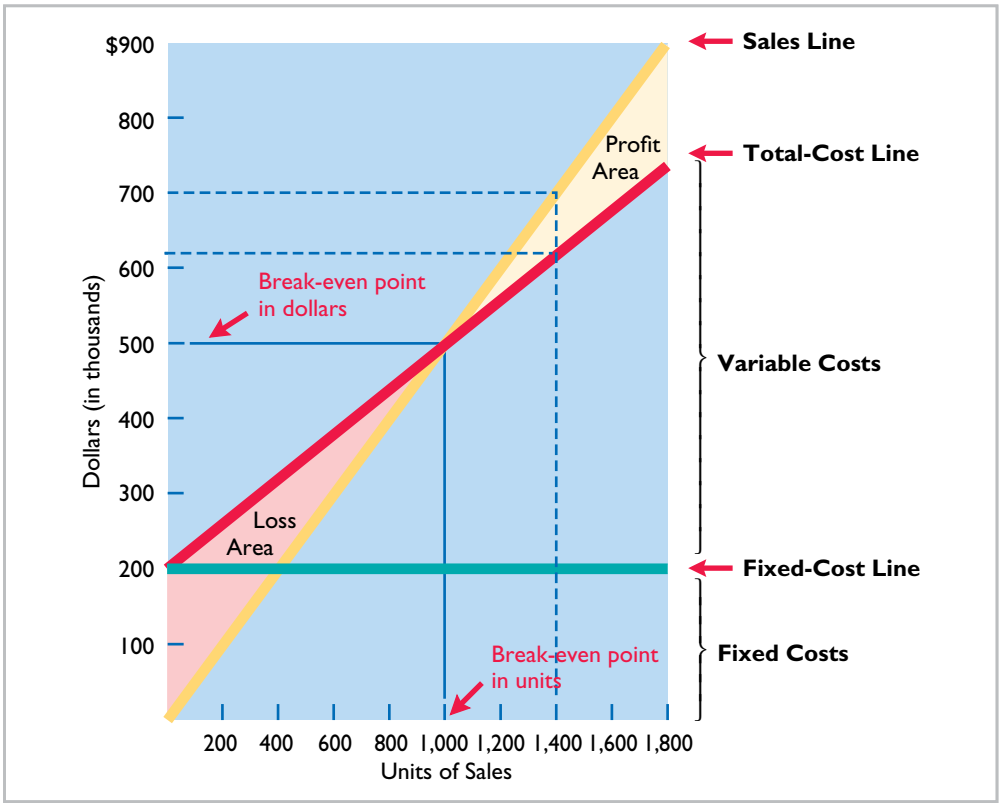


**ILLUSTRATION 22.23**
**CVP graph**

The construction of the graph, using the data for Vargo Electronics, is as follows.

1. Plot the sales line, starting at the zero activity level. For every cell phone sold, total revenue increases by $500. For example, at 200 units, sales are $100,000. At the upper level of activity (1,800 units), sales are $900,000. The revenue line is assumed to be linear through the full range of activity.
2. Plot the total fixed costs using a horizontal line. For the cell phones, this line is plotted at $200,000. The fixed costs are the same at every level of activity.
3. Plot the total-cost line. This starts at the fixed-cost line at zero activity. It increases by the variable costs at each level of activity. For each cell phone, variable costs are $300. Thus, at 200 units, total variable costs are $60,000 ($300 × 200) and the total cost is $260,000 ($60,000 + $200,000). At 1,800 units, total variable costs are $540,000 ($300 × 1,800) and total cost is $740,000 ($540,000 + $200,000). On the graph, the amount of the variable costs can be derived from the difference between the total-cost and fixed-cost lines at each level of activity.
4. Determine the break-even point from the intersection of the total-cost line and the sales line. The break-even point in dollars is found by drawing a horizontal line from the break-even point to the vertical axis. The break-even point in units is found by drawing a vertical line from the break-even point to the horizontal axis. For the cell phones, the break-even point is $500,000 of sales, or 1,000 units. At this sales level, Vargo will cover costs but make no profit.

The CVP graph also shows both the net income and net loss areas. Thus, the amount of income or loss at each level of sales can be derived from the sales and total-cost lines.

A CVP graph is useful because the effects of a change in any element in the CVP analysis can be quickly seen. For example, a 10% increase in selling price will change the location of the sales line. Likewise, the effects on total costs of wage increases can be quickly observed.

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### DO IT! 4 | Break-Even Analysis

Lombardi Company has a unit selling price of $400, variable costs per unit of $240, and fixed costs of $180,000. Compute the break-even point in units using (a) a mathematical equation and (b) unit contribution margin.

**ACTION PLAN**

- Apply the profit equation: Sales − Variable costs − Fixed costs = Net income.
- Apply the break-even formula: Fixed costs ÷ Unit contribution margin = Break-even point in units.

**Solution**

(a) The equation is $400Q − $240Q − $180,000 = $0; ($400Q − $240Q) = $180,000. The break-even point in units is 1,125. (b) The unit contribution margin is $160 ($400 − $240). The formula therefore is $180,000 ÷ $160, and the break-even point in units is 1,125.

Related exercise material: **BE22.8, BE22.9, DO IT! 22.4, E22.8, E22.9, E22.10, E22.11, E22.12, and E22.13.**

# Target Net Income and Margin of Safety

**LEARNING OBJECTIVE 5**

Determine the sales required to earn target net income and determine margin of safety.

## Target Net Income

Rather than simply "breaking even," management usually sets an income objective often called **target net income**. It then determines the sales necessary to achieve this specified level of income. Companies determine the sales necessary to achieve target net income by using one of the three approaches discussed earlier.

### Mathematical Equation

We know that at the break-even point no profit or loss results for the company. By adding an amount for target net income to the same basic equation, we obtain the formula shown in **Illustration 22.24** for determining required sales.

**ILLUSTRATION 22.24**
**Formula for sales to meet target net income**

| Sales | − | Variable Costs | − | Fixed Costs | = | Target Net Income |
|---|---|---|---|---|---|---|

Recall that once the break-even point has been reached so that fixed costs are covered, each additional unit sold increases net income by the amount of the unit contribution margin. We can rewrite the equation with contribution margin (sales minus variable costs) on the left-hand side, and fixed costs and target net income on the right. Assuming that target net income is $120,000 for Vargo Electronics, the computation of required sales in units is as shown in **Illustration 22.25**.

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| Sales | – | Variable Costs | – | Fixed Costs | = | Target Net Income |
|---|---|---|---|---|---|---|
| $500Q | – | $300Q | – | $200,000 | = | $120,000 |
| $500Q | – | $300Q | = | $200,000 | + | $120,000 |

$$\$200Q = \$200{,}000 + \$120{,}000$$

$$Q = \frac{\$200{,}000 + \$120{,}000}{\$200} = \frac{\text{Fixed Costs + Target Net Income}}{\text{Unit Contribution Margin}}$$

$$Q = 1{,}600$$

where

Q = number of units sold
$500 = unit selling price
$300 = unit variable costs
$200,000 = total fixed costs
$120,000 = target net income

**ILLUSTRATION 22.25**
**Computation of required sales**

Vargo must sell 1,600 units to achieve target net income of $120,000. The sales dollars required to achieve the target net income is found by multiplying the units sold by the unit selling price [(1,600 × $500) = $800,000].

## Contribution Margin Technique

As in the case of break-even sales, we can compute in either units or dollars the sales required to meet target net income. The formula to compute required sales in units for Vargo Electronics using the unit contribution margin can be seen in the final step of the equation approach in Illustration 22.25 (shown in red). We simply divide the sum of fixed costs and target net income by the unit contribution margin. **Illustration 22.26** shows this for Vargo.

| (Fixed Costs + Target Net Income) | ÷ | Unit Contribution Margin | = | Sales in Units |
|---|---|---|---|---|
| ($200,000 + $120,000) | ÷ | $200 | = | 1,600 units |

**ILLUSTRATION 22.26**
**Formula for sales in units using unit contribution margin**

To achieve its desired target net income of $120,000, Vargo must sell 1,600 cell phones.

**Illustration 22.27** presents the formula to compute the required sales in dollars for Vargo using the contribution margin ratio.

| (Fixed Costs + Target Net Income) | ÷ | Contribution Margin Ratio | = | Sales in Dollars |
|---|---|---|---|---|
| ($200,000 + $120,000) | ÷ | 40% | = | $800,000 |

**ILLUSTRATION 22.27**
**Formula for sales in dollars using contribution margin ratio**

To achieve its desired target net income of $120,000, Vargo must generate sales of $800,000.

## Graphic Presentation

We also can use the CVP graph in Illustration 22.23 to find the sales required to meet target net income. In the profit area of the graph, the distance between the sales line and the total-cost line at any point equals net income. We can find required sales by analyzing the differences between the two lines until the desired net income is found.

For example, suppose Vargo Electronics sells 1,400 cell phones. Illustration 22.23 shows that a vertical line drawn at 1,400 units intersects the sales line at $700,000 and the total-cost line at $620,000. The difference between the two amounts represents the net income (profit) of $80,000.

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## Margin of Safety

**Margin of safety** is the difference between actual or expected sales and sales at the break-even point. It measures the "cushion" that a particular level of sales provides. It tells us how far sales could fall before the company begins operating at a loss. The margin of safety is expressed in dollars or as a ratio.

The formula for stating the **margin of safety in dollars** is actual (or expected) sales minus break-even sales. **Illustration 22.28** shows the computation for Vargo Electronics, assuming that actual (expected) sales are $750,000.

**ILLUSTRATION 22.28**
**Formula for margin of safety in dollars**

| Actual (Expected) Sales | – | Break-Even Sales | = | Margin of Safety in Dollars |
|---|---|---|---|---|
| $750,000 | – | $500,000 | = | $250,000 |

Vargo's margin of safety is $250,000. Its sales could fall $250,000 before it operates at a loss.

The **margin of safety ratio** is the margin of safety in dollars divided by actual (or expected) sales. **Illustration 22.29** shows the formula and computation for determining the margin of safety ratio.

**ILLUSTRATION 22.29**
**Formula for margin of safety ratio**

| Margin of Safety in Dollars | ÷ | Actual (Expected) Sales | = | Margin of Safety Ratio |
|---|---|---|---|---|
| $250,000 | ÷ | $750,000 | = | 33% |

This means that the company's sales could fall by 33% before it operates at a loss.

**The higher the margin of safety in dollars or the percentage, the lower the risk that the company will operate at a loss.** Management evaluates the adequacy of the margin of safety in terms of such factors as the vulnerability of the product to competitive pressures and to downturns in the economy.

### Service Company Insight Rolling Stones

Yael/Retna

#### How a Rolling Stones' Tour Makes Money

Computations of break-even and margin of safety are important for service companies. Consider how the promoter for the **Rolling Stones**' tour used the break-even point and margin of safety. For example, say one outdoor show should bring 70,000 individuals for ticket sales of $2.45 million. The promoter guarantees $1.2 million to the Rolling Stones. In addition, 20% of ticket sales goes to the stadium in which the performance is staged. Add another $400,000 for other expenses such as ticket takers, parking attendants, advertising, and so on. The promoter also shares in sales of T-shirts and memorabilia for which the promoter will net over $7 million during the tour. From a successful Rolling Stones' tour, the promoter could make $35 million!

**What amount of sales dollars are required for the promoter to break even? (Go to WileyPLUS for this answer and additional questions.)**

### DO IT! 5 | Break-Even, Margin of Safety, and Target Net Income

Zootsuit Inc. makes travel bags that sell for $56 each. For the coming year, management expects fixed costs to total $320,000 and variable costs to be $42 per unit. Compute the following: (a) break-even point in dollars using the contribution margin (CM) ratio; (b) the margin of safety and margin of safety ratio assuming actual sales are $1,382,400; and (c) the sales dollars required to earn net income of $410,000.

**ACTION PLAN**

- Apply the formula for the break-even point in dollars.
- Apply the formulas for the margin of safety in dollars and the margin of safety ratio.
- Apply the formula for the sales in dollars.

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**Solution**

**a.** Contribution margin ratio = [($56 − $42) ÷ $56] = 25%
Break-even sales in dollars = $320,000 ÷ 25% = $1,280,000

**b.** Margin of safety = $1,382,400 − $1,280,000 = $102,400
Margin of safety ratio = $102,400 ÷ $1,382,400 = 7.4%

**c.** Sales in dollars = ($320,000 + $410,000) ÷ 25% = $2,920,000

Related exercise material: **BE22.10, BE22.11, BE22.12, DO IT! 22.5, E22.14, E22.15, E22.16, and E22.17.**

# Appendix 22A Regression Analysis

**LEARNING OBJECTIVE *6**

Describe how regression analysis is used to classify mixed costs.

The high-low method is often used to estimate fixed and variable costs for a mixed-cost situation. An advantage of the high-low method is that it is easy to apply. But, how accurate and reliable is the estimated cost equation that it produces? For example, consider the example shown in **Illustration 22A.1**, which indicates the cost equation line produced by the high-low method for Metro Transit Company's maintenance costs. How well does the high-low method represent the relationship between miles driven and total cost? This line is close to, and in some cases bisects, nearly all of the data points. Therefore, in this case, the high-low method provides a cost equation that is a very good fit for this data set. It identifies fixed and variable costs in an accurate and reliable way.

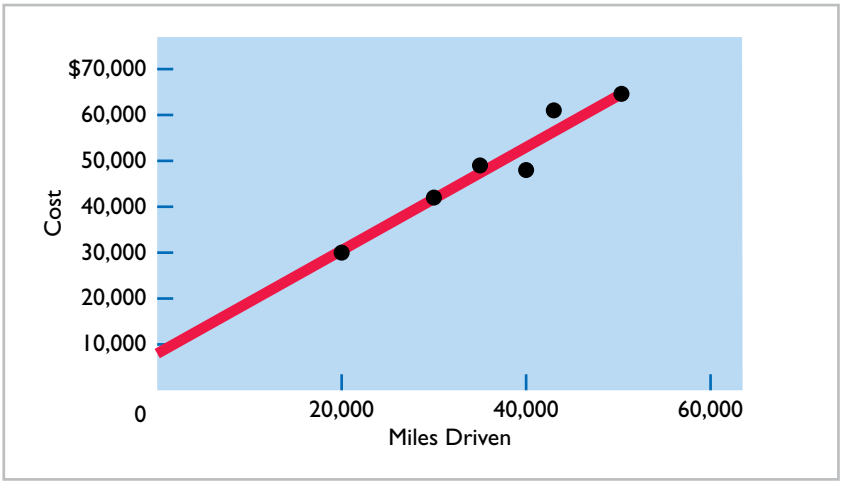


**ILLUSTRATION 22A.1**
**Scatter plot for Metro Transit Company**

While the high-low method works well for the Metro Transit data set, a weakness of this method is that it employs only two data points and ignores the rest. If those two data points are representative of the entire data set, then the high-low method provides reasonable results (as seen in Illustration 22A.1). But, if the high and low data points are not representative of the rest of the data set, then the results are misleading. To illustrate, assume that Hanson Trucking Company has 12 months of maintenance cost data, as shown in **Illustration 22A.2**.

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**ILLUSTRATION 22A.2**

**Maintenance costs and mileage data for Hanson Trucking Company**

| Month | Miles Driven | Total Cost | Month | Miles Driven | Total Cost |
|---|---|---|---|---|---|
| January | 20,000 | $30,000 | July | 15,000 | $39,000 |
| February | 40,000 | 49,000 | August | 28,000 | 41,000 |
| March | 35,000 | 46,000 | September | 60,000 | 72,000 |
| April | 50,000 | 63,000 | October | 55,000 | 67,000 |
| May | 30,000 | 42,000 | November | 19,000 | 29,000 |
| June | 43,000 | 52,000 | December | 65,000 | 63,000 |

The high and low activities are 65,000 miles in December and 15,000 miles in July. The maintenance costs at these two levels are $63,000 and $39,000, respectively. The difference in maintenance costs is $24,000 ($63,000 − $39,000), and the difference in miles is 50,000 (65,000 − 15,000). Therefore, for Hanson Trucking, variable cost per unit under the high-low method is $0.48 ($24,000 ÷ 50,000). To determine total variable cost, we multiply the number of miles by cost per mile. For example, at the low activity level of 15,000 miles, total variable cost is $7,200 (15,000 × $0.48). To determine fixed costs, we subtract total variable costs at the low activity level from the total cost at the low activity level ($39,000) as follows.

**Fixed costs** = $39,000 − ($0.48 × 15,000) = $31,800

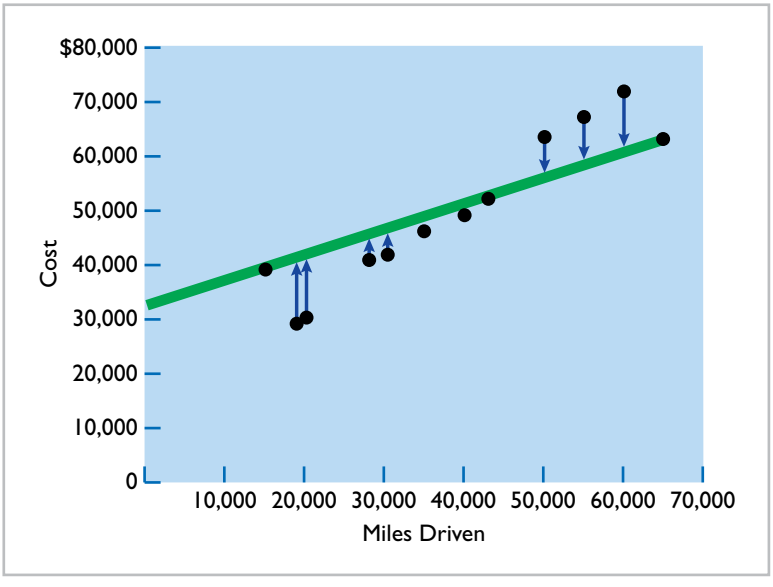
Therefore, the cost equation based on the high-low method for this data produces the following formula:

| | | | | |
|---|---|---|---|---|
| **Maintenance costs** | **=** | **Intercept** | **+** | **Slope** |
| | = | $31,800 | + | ($0.48 × Miles driven) |

Illustration 22A.3 shows a scatter plot of the data with a line representing the high-low method cost equation. Note that most of the data points for Hanson Trucking are a significant distance from the line. For example, at 19,000 miles, the observed maintenance cost is $29,000, but the equation predicts $40,920 [$31,800 + ($0.48 × 19,000)]. That is a difference of $11,920 ($40,920 − $29,000). In this case, the high-low method cost equation does not provide a good representation of the relationship between miles driven and maintenance costs. To derive a more representative cost equation, the company should employ regression analysis.

**ILLUSTRATION 22A.3**

**Scatter plot for Hanson Trucking Company**



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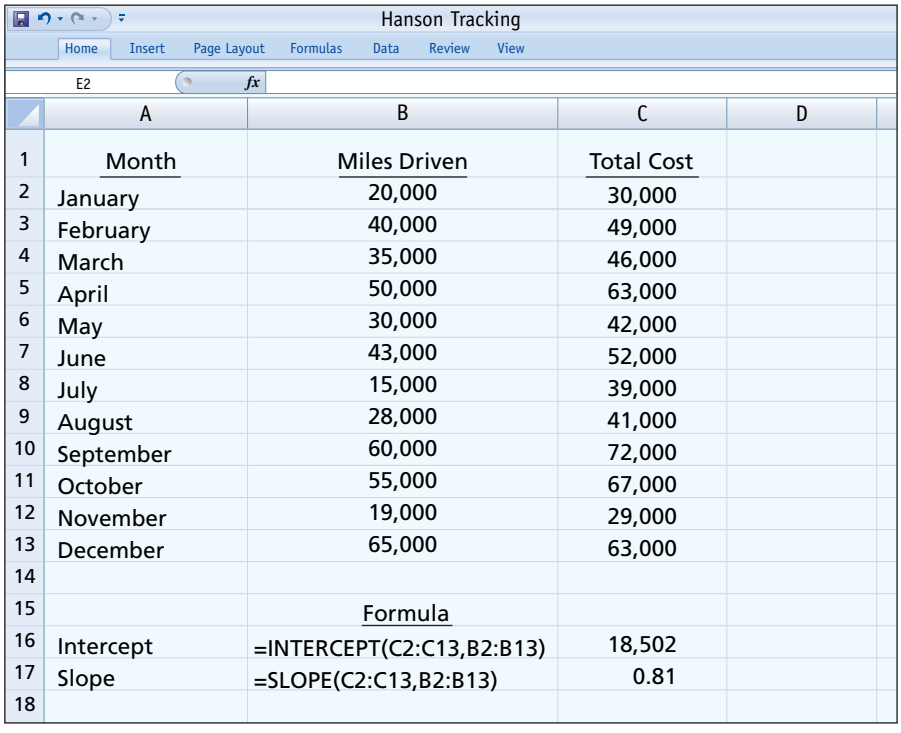
**Regression analysis** is a statistical approach that estimates the cost equation by employing information from all data points, not just the highest and lowest ones. While it involves mathematical analysis taught in statistics courses (which we will not address here), we can provide you with a basic understanding of how regression analysis works. Consider Illustration 22A.3, which highlights the distance that each data point is from the high-low cost equation line. What regression analysis does is to find a cost equation that results in a cost equation line that minimizes the sum of the (squared) distances from the line to the data points.

Many software packages perform regression analysis. In **Illustration 22A.4**, we use the **Intercept** and **Slope** functions in Excel to estimate the regression equation for the Hanson Trucking Company data.[1] The Excel video provided in WileyPLUS demonstrates the use of the Intercept and Slope functions.




| | A | B | C | D |
|---|---|---|---|---|
| 1 | Month | Miles Driven | Total Cost | |
| 2 | January | 20,000 | 30,000 | |
| 3 | February | 40,000 | 49,000 | |
| 4 | March | 35,000 | 46,000 | |
| 5 | April | 50,000 | 63,000 | |
| 6 | May | 30,000 | 42,000 | |
| 7 | June | 43,000 | 52,000 | |
| 8 | July | 15,000 | 39,000 | |
| 9 | August | 28,000 | 41,000 | |
| 10 | September | 60,000 | 72,000 | |
| 11 | October | 55,000 | 67,000 | |
| 12 | November | 19,000 | 29,000 | |
| 13 | December | 65,000 | 63,000 | |
| 14 | | | | |
| 15 | | Formula | | |
| 16 | Intercept | =INTERCEPT(C2:C13,B2:B13) | 18,502 | |
| 17 | Slope | =SLOPE(C2:C13,B2:B13) | 0.81 | |
| 18 | | | | |

**ILLUSTRATION 22A.4**
**Excel spreadsheet for Hanson Trucking Company**

The resulting cost equation is:

| | | | | |
|---|---|---|---|---|
| **Maintenance costs** | **=** | **Intercept** | **+** | **Slope** |
| | = | $18,502 | + | ($0.81 × Miles driven) |

Compare this to the high-low cost equation:

| | | | | |
|---|---|---|---|---|
| **Maintenance costs** | **=** | **Intercept** | **+** | **Slope** |
| | = | $31,800 | + | ($0.48 × Miles driven) |

[1] To use the Intercept and Slope functions in Excel, enter your data in two columns in an Excel spreadsheet. The first column should be your "X" variable (miles driven, cells B2 to B13 in our example). The second column should be your "Y" variable (maintenance costs, cells C2 to C13 in our example). Next, in a separate cell, choosing from Excel's statistical functions, enter =Intercept(C2:C13,B2:B13) and in a different cell enter =Slope(C2:C13,B2:B13).

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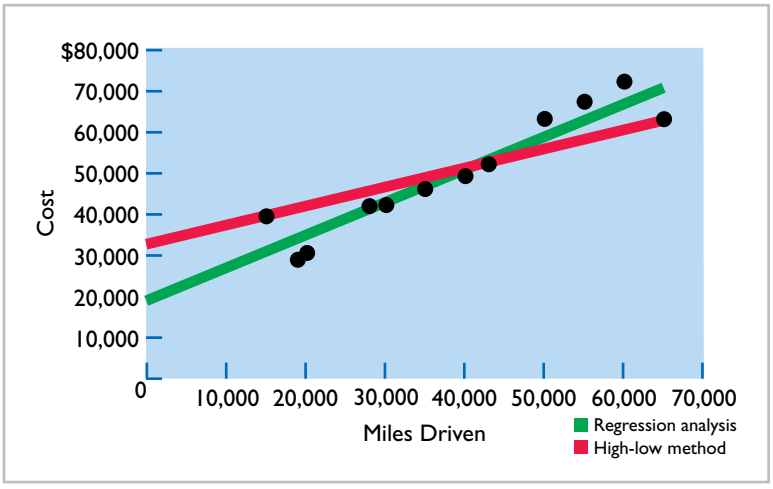
As **Illustration 22A.5** shows, the intercept and slope differ significantly between the regression equation (green) and the high-low equation (red).[2] The regression cost equation line does not bisect the high and low data points but instead follows a path that minimizes the cumulative distance from all of the data points. By doing so, it provides a cost equation that is more representative of the relationship between miles driven and total maintenance costs than the high-low method.

**ILLUSTRATION 22A.5**

**Scatter plot and cost equation lines**




Why should managers care about the accuracy of the cost equation? Managers make many decisions that require that mixed costs be separated into fixed and variable components. Inaccurate classifications of these costs might cause a manager to make an inappropriate decision. For example, Hanson Trucking Company's break-even point differs significantly depending on which of these two cost equations was used. If Hanson Trucking relies on the high-low method, it would have a distorted view of the level of sales it would need in order to break even. In addition, misrepresentation for fixed and variable costs could result in inappropriate decisions, such as whether to discontinue a product line. It would also result in inaccurate product costing under activity-based costing.

While regression analysis usually provides more reliable estimates of the cost equation, it does have its limitations.

1. The regression approach that we applied above assumes a linear relationship between the variables (that is, an increase or decrease in one variable results in a proportional increase or decrease in the other). If the actual relationship differs significantly from linearity, then linear regression can provide misleading results. (Nonlinear regression is addressed in advanced statistics courses.)
2. Regression estimates can be severely influenced by "outliers"—data points that differ significantly from the rest of the observations. It is therefore good practice to plot data points in a scatter graph to identify outliers and then investigate the reasons why they differ. In some cases, outliers must be adjusted for or eliminated.
3. Regression estimation is most accurate when it is based on a large number of data points. However, collecting data can be time-consuming and costly. In some cases, there simply are not enough observable data points to arrive at a reliable estimate.

[2] To plot a scatter graph in Excel, highlight the data and then click on Scatter under the Insert tab. To draw the cost equation line, click on the scatter plot, then select Layout and Trendline. In order to get the cost equation line to intercept the Y axis, under Trendline Options in the Backward field, enter the lowest value of your X variable. For example, for Hanson Trucking, we entered 15,000.

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# Review and Practice

## Learning Objectives Review

### 1 Explain variable, fixed, and mixed costs and the relevant range.

Variable costs are costs that vary in total directly and proportionately with changes in the activity index. Fixed costs are costs that remain the same in total regardless of changes in the activity index.

The relevant range is the range of activity in which a company expects to operate during a year. It is important in CVP analysis because the behavior of costs is assumed to be linear throughout the relevant range.

Mixed costs change in total but not proportionately with changes in the activity level. For purposes of CVP analysis, mixed costs must be classified into their fixed and variable elements.

### 2 Apply the high-low method to determine the components of mixed costs.

Determine the variable costs per unit by dividing the change in total costs at the highest and lowest levels of activity by the difference in activity at those levels. Then, determine fixed costs by subtracting total variable costs from the amount of total costs at either the highest or lowest level of activity.

### 3 Prepare a CVP income statement to determine contribution margin.

The five components of CVP analysis are (1) volume or level of activity, (2) unit selling prices, (3) variable costs per unit, (4) total fixed costs, and (5) sales mix. Contribution margin is the amount of revenue remaining after deducting variable costs. It is identified in a CVP income statement, which classifies costs as variable or fixed. It can be expressed as a total amount, as a per unit amount, or as a ratio.

### 4 Compute the break-even point using three approaches.

The break-even point can be (a) computed from a mathematical equation, (b) computed by using a contribution margin technique, and (c) derived from a CVP graph.

### 5 Determine the sales required to earn target net income and determine margin of safety.

The general formula for required sales is Sales − Variable costs − Fixed costs = Target net income. Two other formulas are (1) Sales in units = (Fixed costs + Target net income) ÷ Unit contribution margin, and (2) Sales in dollars = (Fixed costs + Target net income) ÷ Contribution margin ratio.

Margin of safety is the difference between actual or expected sales and sales at the break-even point. The formulas for margin of safety are (1) Actual (expected) sales − Break-even sales = Margin of safety in dollars, and (2) Margin of safety in dollars ÷ Actual (expected) sales = Margin of safety ratio.

### *6 Describe how regression analysis is used to classify mixed costs.

The high-low method provides a quick estimate of the cost equation for a mixed cost. However, the high-low method is based on only the highest and lowest data points. Regression analysis provides an estimate of the cost equation based on all data points. The cost equation line that results from regression analysis minimizes the sum of the (squared) distances of all of the data points from the cost equation line. Computer programs such as Excel enable easy estimation of the cost equation with regression.

## Glossary Review

**Activity index** The activity that causes changes in the behavior of costs. (p. 22-3).

**Break-even point** The level of activity at which total revenue equals total costs. (p. 22-12).

**Contribution margin (CM)** The amount of revenue remaining after deducting variable costs. (p. 22-11).

**Contribution margin ratio** The percentage of each dollar of sales that is available to apply to fixed costs and contribute to net income; calculated as unit contribution margin divided by unit selling price. (p. 22-13).

**Cost behavior analysis** The study of how specific costs respond to changes in the level of business activity. (p. 22-2).

**Cost-volume-profit (CVP) analysis** The study of the effects of changes in costs and volume on a company's profits. (p. 22-10).

**Cost-volume-profit (CVP) graph** A graph showing the relationship between costs, volume, and profits. (p. 22-16).

**Cost-volume-profit (CVP) income statement** A statement for internal use that classifies costs as fixed or variable and reports contribution margin in the body of the statement. (p. 22-11).

**Fixed costs** Costs that remain the same in total regardless of changes in the activity level. (p. 22-3).

**High-low method** A mathematical method that uses the total costs incurred at the high and low levels of activity to classify mixed costs into fixed and variable components. (p. 22-7).

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**Margin of safety** The difference between actual or expected sales and sales at the break-even point. (p. 22-20).

**Mixed costs** Costs that contain both a variable- and a fixed-cost element and change in total but not proportionately with changes in the activity level. (p. 22-6).

***Regression analysis** A statistical approach that estimates the cost equation by employing information from all data points to find the cost equation line that minimizes the sum of the squared distances from the line to the data points. (p. 22-23).

**Relevant range** The range of the activity index over which the company expects to operate during the year. (p. 22-5).

**Target net income** The income objective set by management. (p. 22-18).

**Unit contribution margin** The amount of revenue remaining per unit after deducting variable costs; calculated as unit selling price minus unit variable costs. (p. 22-12).

**Variable costs** Costs that vary in total directly and proportionately with changes in the activity level. (p. 22-3).

## Practice Multiple-Choice Questions

**1. (LO 1)** Variable costs are costs that:

**a.** vary in total directly and proportionately with changes in the activity level.

**b.** remain the same per unit at every activity level.

**c.** Neither of the above.

**d.** Both (a) and (b) above.

**2. (LO 2)** The relevant range is:

**a.** the range of activity in which variable costs will be curvilinear.

**b.** the range of activity in which fixed costs will be curvilinear.

**c.** the range over which the company expects to operate during a year.

**d.** usually from zero to 100% of operating capacity.

**3. (LO 1, 2)** Mixed costs consist of a:

**a.** variable-cost element and a fixed-cost element.

**b.** fixed-cost element and a product-cost element.

**c.** period-cost element and a product-cost element.

**d.** variable-cost element and a period-cost element.

**4. (LO 1, 2)** Your cell phone service provider offers a plan that is classified as a mixed cost. The cost per month for 1,000 minutes is $50. If you use 2,000 minutes this month, your cost will be:

**a.** $50.

**b.** $100.

**c.** more than $100.

**d.** between $50 and $100.

**5. (LO 2)** Kendra Corporation's total utility costs during the past year were $1,200 during its highest month and $600 during its lowest month. These costs corresponded with 10,000 units of production during the high month and 2,000 units during the low month. What are the fixed and variable components of its utility costs using the high-low method?

**a.** $0.075 variable and $450 fixed.

**b.** $0.120 variable and $0 fixed.

**c.** $0.300 variable and $0 fixed.

**d.** $0.060 variable and $600 fixed.

**6. (LO 3)** Which of the following is **not** involved in CVP analysis?

**a.** Sales mix.

**b.** Unit selling prices.

**c.** Fixed costs per unit.

**d.** Volume or level of activity.

**7. (LO 3)** When comparing a traditional income statement to a CVP income statement:

**a.** net income will always be greater on the traditional statement.

**b.** net income will always be less on the traditional statement.

**c.** net income will always be identical on both.

**d.** net income will be greater or less depending on the sales volume.

**8. (LO 3)** Contribution margin:

**a.** is revenue remaining after deducting variable costs.

**b.** may be expressed as unit contribution margin.

**c.** is selling price less cost of goods sold.

**d.** Both (a) and (b) above.

**9. (LO 3)** Cournot Company sells 100,000 wrenches for $12 a unit. Fixed costs are $300,000, and net income is $200,000. What should be reported as variable expenses in the CVP income statement?

**a.** $700,000.

**b.** $900,000.

**c.** $500,000.

**d.** $1,000,000.

**10. (LO 4)** Gossen Company is planning to sell 200,000 pliers for $4 per unit. The contribution margin ratio is 25%. If Gossen will break even at this level of sales, what are the fixed costs?

**a.** $100,000.

**b.** $160,000.

**c.** $200,000.

**d.** $300,000.

**11. (LO 4)** Brownstone Company's contribution margin ratio is 30%. If Brownstone's sales revenue is $100 greater than its break-even sales in dollars, its net income:

**a.** will be $100.

**b.** will be $70.

**c.** will be $30.

**d.** cannot be determined without knowing fixed costs.

**12. (LO 5)** The mathematical equation for computing required sales to obtain target net income is Sales =

**a.** Variable costs + Target net income.

**b.** Variable costs + Fixed costs + Target net income.

**c.** Fixed costs + Target net income.

**d.** No correct answer is given.

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**13.** **(LO 5)** Margin of safety is computed as:

**a.** Actual sales – Break-even sales.

**b.** Contribution margin – Fixed costs.

**c.** Break-even sales – Variable costs.

**d.** Actual sales – Contribution margin.

**14.** **(LO 5)** Marshall Company had actual sales of $600,000 when break-even sales were $420,000. What is the margin of safety ratio?

**a.** 25%.

**b.** 30%.

**c.** 33⅓%.

**d.** 45%.

### Solutions

**1. d.** Variable costs vary in total directly and proportionately with changes in the activity level and remain the same per unit at every activity level. Choices (a) and (b) are correct, but (d) is the better and more complete answer. Since (a) and (b) are both true statements, choice (c) is incorrect.

**2. c.** The relevant range is the range over which the company expects to operate during a year. The other choices are incorrect because the relevant range is the range over which (a) variable costs are expected to be linear, not curvilinear, and (b) the company expects fixed costs to remain the same. Choice (d) is incorrect because this answer does not specifically define relevant range.

**3. a.** Mixed costs consist of a variable-cost element and a fixed-cost element, not (b) a product-cost element, (c) a period-cost element or a product-cost element, or (d) a period-cost element.

**4. d.** Your cost will include the fixed-cost component (flat service fee) which does not increase plus the variable cost (usage charge) for the additional 1,000 minutes which will increase your cost to between $50 and $100. Therefore, choices (a) $50, (b) $100, and (c) more than $100 are incorrect.

**5. a.** Variable is $0.075 [($1,200 − $600) ÷ (10,000 − 2,000)] and fixed is $450 [($1,200 − ($0.075 × 10,000)]. Therefore, choices (b) $0.120 variable and $0 fixed, (c) $0.300 variable and $0 fixed, and (d) $0.060 variable and $600 fixed are incorrect.

**6. c.** Total fixed costs, not fixed costs per unit, are involved in CVP analysis. Choices (a) sales mix, (b) unit selling prices, and (d) volume or level of activity are all involved in CVP analysis.

**7. c.** Net income will always be identical on both a traditional income statement and a CVP income statement. Therefore, choices (a), (b), and (d) are incorrect statements.

**8. d.** Contribution margin is revenue remaining after deducting variable costs and it may be expressed on a per unit basis. Choices (a) and (b) are accurate, but (d) is a better answer. Choice (c) is incorrect because it defines gross margin, not contribution margin.

**9. a.** Contribution margin is equal to fixed costs plus net income ($300,000 + $200,000 = $500,000). Since variable expenses are the difference between total sales ($1,200,000) and contribution margin ($500,000), $700,000 must be the amount of variable expenses in the CVP income statement. Therefore, choices (b) $900,000, (c) $500,000, and (d) $1,000,000 are incorrect.

**10. c.** Unit contribution margin is $1 ($4 × 25%). Fixed costs ÷ Unit contribution margin = Break-even point in units. Solving for fixed costs, 200,000 units × $1 per unit = $200,000, not (a) $100,000, (b) $160,000, or (d) $300,000.

**11. c.** If Brownstone's sales revenue is $100 greater than its break-even sales in dollars, its net income will be $30 or ($100 × 30%), not (a) $100 or (b) $70. Choice (d) is incorrect because net income can be determined without knowing fixed costs.

**12. b.** The correct equation is Sales = Variable costs + Fixed costs + Target net income. The other choices are incorrect because (a) needs fixed costs added, (b) needs variable costs added, and (d) there is a correct answer given (b).

**13. a.** Margin of safety is computed as Actual sales – Break-even sales. Therefore, choices (b) Contribution margin – Fixed costs, (c) Break-even sales – Variable costs, and (d) Actual sales – Contribution margin are incorrect.

**14. b.** The margin of safety ratio is computed by dividing the margin of safety in dollars of $180,000 ($600,000 – $420,000) by actual sales of $600,000. The result is 30% ($180,000 ÷ $600,000), not (a) 25%, (c) 33⅓%, or (d) 45%.

## Practice Brief Exercises

**1.** **(LO 2)** Benji Company accumulates the following data concerning a mixed cost, using miles as the activity level.

*Determine variable- and fixed-cost elements using the high-low method.*

| | Miles Driven | Total Cost | | Miles Driven | Total Cost |
|---|---|---|---|---|---|
| January | 7,500 | $20,000 | March | 8,500 | $22,000 |
| February | 8,200 | 21,100 | April | 8,300 | 21,750 |

Compute the variable- and fixed-cost elements using the high-low method.

### Solution

**1.**

| High | | Low | | Difference |
|---|---|---|---|---|
| $22,000 | – | $20,000 | = | $2,000 |
| 8,500 | – | 7,500 | = | 1,000 |

Variable cost per mile = $2,000 ÷ 1,000 = $2.00.

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| | High | Low |
|---|---|---|
| Total cost | $22,000 | $20,000 |
| Less: Variable costs | | |
| 8,500 × $2.00 | 17,000 | |
| 7,500 × $2.00 | | 15,000 |
| Total fixed costs | $ 5,000 | $ 5,000 |

Mixed cost is $5,000 plus $2.00 per mile.

*Determine missing amounts for contribution margin.*

**2. (LO 3)** Determine the missing amounts.

| Unit Selling Price | Unit Variable Costs | Unit Contribution Margin | Contribution Margin Ratio |
|---|---|---|---|
| $800 | $520 | (a) | (b) |
| 500 | (c) | $200 | (d) |
| (e) | (f) | 450 | 45% |

### Solution

**2. a.** ($800 − $520) = $280

**b.** ($280 ÷ $800) = 35%

**c.** ($500 − $200) = $300

**d.** ($200 ÷ $500) = 40%

**e.** ($450 ÷ 45%) = $1,000

**f.** ($1,000 − $450) = $550

*Compute the break-even point.*

**3. (LO 4)** Jacob Company has a unit selling price of $600, variable costs per unit of $216, and fixed costs of $2,438,400. Compute the break-even point in units using (a) the mathematical equation and (b) unit contribution margin.

### Solution

**3. a.** $600Q – $216Q – $2,438,400 = $0

$384Q = $2,438,400

Q = 6,350 units

**b.** Contribution margin per unit = ($600 – $216) = $384

Unit contribution margin = $2,438,400 ÷ $384 = 6,350 units

*Compute the margin of safety and margin of safety ratio.*

**4. (LO 5)** For Posh Company, actual sales are $1,500,000, and break-even sales are $1,300,000. Compute (a) the margin of safety in dollars and (b) the margin of safety ratio.

### Solution

**4. a.** Margin of safety = $1,500,000 – $1,300,000 = $200,000

**b.** Margin of safety ratio = $200,000 ÷ $1,500,000 = 13.3%

## Practice Exercises

*Determine fixed and variable costs using the high-low method and prepare graph.*

**1. (LO 1, 2)** The controller of Teton Industries has collected the following monthly expense data for use in analyzing the cost behavior of maintenance costs.

| Month | Total Maintenance Costs | Total Machine Hours |
|---|---|---|
| January | $2,900 | 300 |
| February | 3,000 | 400 |
| March | 3,600 | 600 |
| April | 4,300 | 790 |
| May | 3,200 | 500 |
| June | 4,500 | 800 |

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**Instructions**

**a.** Determine the fixed-cost and variable-cost components using the high-low method.

**b.** Prepare a graph showing the behavior of maintenance costs, and identify the fixed-cost and variable-cost elements. Use 200 unit increments and $1,000 cost increments.

**Solution**

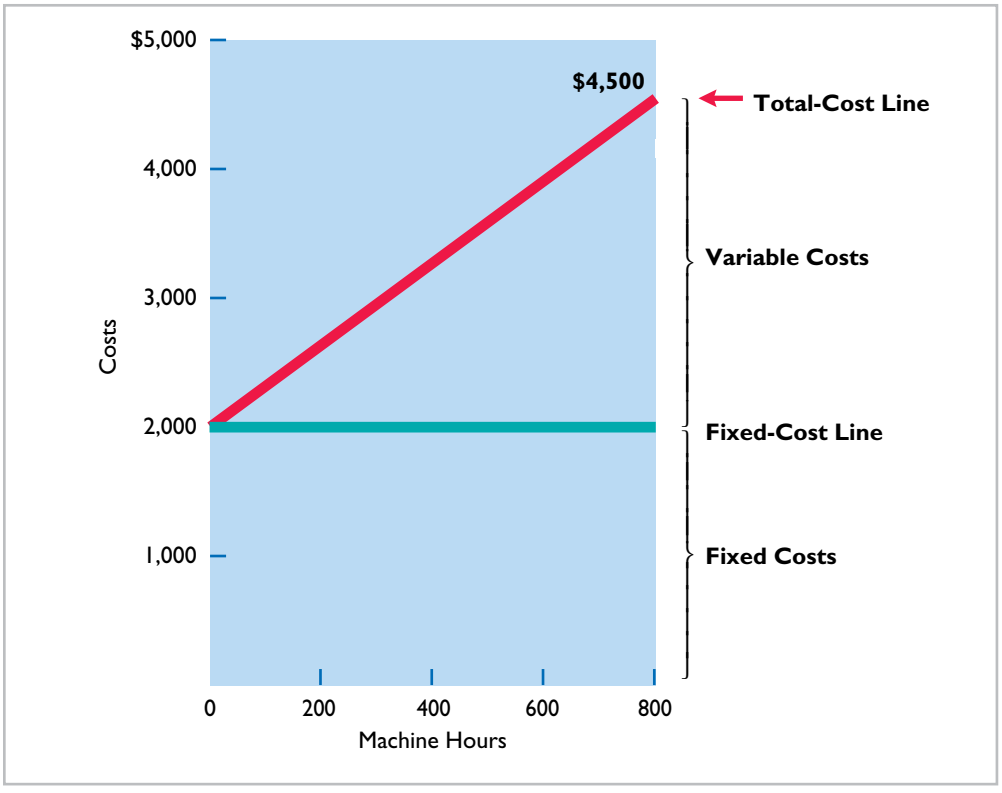
**1. a. Maintenance Costs:**

$$\frac{\$4,500 - \$2,900}{800 - 300} = \frac{\$1,600}{500} = \$3.20 \text{ variable cost per machine hour}$$

| | 800 Machine Hours | 300 Machine Hours |
|---|---|---|
| Total costs | $4,500 | $2,900 |
| Less: Variable costs | | |
| 800 × $3.20 | 2,560 | |
| 300 × $3.20 | | 960 |
| Total fixed costs | $1,940 | $1,940 |

Thus, maintenance costs are $1,940 per month plus $3.20 per machine hour.

**b.**




**2. (LO 3, 4, 5)** Zion Seating Co., a manufacturer of chairs, had the following data for 2020:

*Determine contribution margin ratio, break-even point in dollars, and margin of safety.*

| | |
|---|---|
| Sales | 2,400 units |
| Sales price | $40 per unit |
| Variable costs | $15 per unit |
| Fixed costs | $19,500 |

**Instructions**

**a.** What is the contribution margin ratio?

**b.** What is the break-even point in dollars?

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**c.** What is the margin of safety in dollars and the margin of safety ratio?

**d.** If the company wishes to increase its total dollar contribution margin by 40% in 2021, by how much will it need to increase its sales if all other factors remain constant?

(CGA adapted)

### Solution

**2. a.** Contribution margin ratio = Unit contribution margin ÷ Unit selling price
($40 − $15) ÷ $40 = 62.5%

**b.** Break-even in dollars: $19,500 ÷ 62.5% = $31,200

**c.** Margin of safety in dollars = (2,400 × $40) − $31,200 = $64,800
Margin of safety ratio = $64,800 ÷ (2,400 × $40) = 67.5%

**d.** Current contribution margin is $40 − $15 = $25
Total contribution margin is $25 × 2,400 = $60,000
40% increase in contribution margin is $60,000 × 40% = $24,000
Total increase in sales required is $24,000 ÷ 62.5% = $38,400

## Practice Problem

*Compute break-even point, contribution margin ratio, margin of safety, and sales for target net income.*

**(LO 4, 5)** Mabo Company makes calculators that sell for $20 each. For the coming year, management expects fixed costs to total $220,000 and variable costs to be $9 per unit.

### Instructions

**a.** Compute break-even point in units using the mathematical equation.

**b.** Compute break-even point in dollars using the contribution margin (CM) ratio.

**c.** Compute the margin of safety percentage assuming actual sales are $500,000.

**d.** Compute the sales required in dollars to earn net income of $165,000.

### Solution

**a.** Sales − Variable costs − Fixed costs = Net income
$20Q − $9Q − $220,000 = $0
$11Q = $220,000
Q = 20,000 units

**b.** Unit contribution margin = Unit selling price − Unit variable costs
$11 = $20 − $9
Contribution margin ratio = Unit contribution margin ÷ Unit selling price
55% = $11 ÷ $20
Break-even point in dollars = Fixed costs ÷ Contribution margin ratio
= $220,000 ÷ 55%
= $400,000

**c.** $$\text{Margin of safety} = \frac{\text{Actual sales} - \text{Break-even sales}}{\text{Actual sales}}$$
$$= \frac{\$500{,}000 - \$400{,}000}{\$500{,}000}$$
$$= 20\%$$

**d.** Sales − Variable costs − Fixed costs = Net income
$20Q − $9Q − $220,000 = $165,000
$11Q = $385,000
Q = 35,000 units

35,000 units × $20 = $700,000 required sales

OR

(Fixed costs + Target net income) ÷ Contribution margin ratio = Sales in dollars
($220,000 + $165,000) ÷ .55 = $700,000

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## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendix to this chapter.

## Questions

**1.** **a.** What is cost behavior analysis?

**b.** Why is cost behavior analysis important to management?

**2.** **a.** Scott Winter asks your help in understanding the term "activity index." Explain the meaning and importance of this term for Scott.

**b.** State the two ways that variable costs may be defined.

**3.** Contrast the effects of changes in the activity level on total fixed costs and on unit fixed costs.

**4.** J. P. Alexander claims that the relevant range concept is important only for variable costs.

**a.** Explain the relevant range concept.

**b.** Do you agree with J. P.'s claim? Explain.

**5.** "The relevant range is indispensable in cost behavior analysis." Is this true? Why or why not?

**6.** Adam Antal is confused. He does not understand why rent on his apartment is a fixed cost and rent on a Hertz rental truck is a mixed cost. Explain the difference to Adam.

**7.** How should mixed costs be classified in CVP analysis? What approach is used to effect the appropriate classification?

**8.** At the high and low levels of activity during the month, direct labor hours are 90,000 and 40,000, respectively. The related costs are $165,000 and $100,000. What are the fixed and variable costs at each level of activity?

**9.** "Cost-volume-profit (CVP) analysis is based entirely on unit costs." Do you agree? Explain.

**10.** Faye Dunn defines contribution margin as the amount of profit available to cover operating expenses. Is there any truth in this definition? Discuss.

**11.** Marshall Company's GWhiz calculator sells for $40. Variable costs per unit are estimated to be $26. What are the unit contribution margin and the contribution margin ratio?

**12.** "Break-even analysis is of limited use to management because a company cannot survive by just breaking even." Do you agree? Explain.

**13.** Total fixed costs are $26,000 for Daz Inc. It has a unit contribution margin of $15, and a contribution margin ratio of 25%. Compute the break-even sales in dollars.

**14.** Peggy Turnbull asks your help in constructing a CVP graph. Explain to Peggy (a) how the break-even point is plotted, and (b) how the level of activity and dollar sales at the break-even point are determined.

**15.** Define the term "margin of safety." If Revere Company expects to sell 1,250 units of its product at $12 per unit, and break-even sales for the product are $13,200, what is the margin of safety ratio?

**16.** Huang Company's break-even sales are $500,000. Assuming fixed costs are $180,000, what sales volume is needed to achieve a target net income of $90,000?

**17.** The traditional income statement for Pace Company shows sales $900,000, cost of goods sold $600,000, and operating expenses $200,000. Assuming all costs and expenses are 70% variable and 30% fixed, prepare a CVP income statement through contribution margin.

***18.** James Brooks estimated the variable and fixed components of his company's utility costs using the high-low method. He is concerned that the cost equation that resulted from the high-low method might not provide an accurate representation of his company's utility costs. What is the inherent weakness of the high-low method? What alternative approach might Brooks use, and what are its advantages?

***19.** Mary Webster owns and manages a company that provides trenching services. Her clients are companies that need to lay power lines, gas lines, and fiber optic cable. Because trenching machines require considerable maintenance due to the demanding nature of the work, Mary has created a scatter plot that displays her monthly maintenance costs. If Mary were to estimate a cost equation line using regression analysis for the data in her scatter plot, what primary characteristic would that line display?

***20.** What are some of the limitations of regression analysis?

## Brief Exercises

**BE22.1 (LO 1)** Monthly production costs in Dilts Company for two levels of production are as follows.

*Classify costs as variable, fixed, or mixed.*

| Cost | 2,000 Units | 4,000 Units |
|---|---|---|
| Indirect labor | $10,000 | $20,000 |
| Supervisory salaries | 5,000 | 5,000 |
| Maintenance | 4,000 | 6,000 |

Indicate which costs are variable, fixed, and mixed, and give the reason for each answer.

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*Diagram the behavior of costs within the relevant range.*

**BE22.2 (LO 1)** For Lodes Company, the relevant range of production is 40–80% of capacity. At 40% of capacity, a variable cost is $4,000 and a fixed cost is $6,000. Diagram the behavior of each cost within the relevant range assuming the behavior is linear.

*Diagram the behavior of a mixed cost.*

**BE22.3 (LO 1)** For Wesland Company, a mixed cost is $15,000 plus $18 per direct labor hour. Diagram the behavior of the cost using increments of 500 hours up to 2,500 hours on the horizontal axis and increments of $15,000 up to $60,000 on the vertical axis.

*Determine variable- and fixed-cost elements using the high-low method.*

**BE22.4 (LO 2)** Bruno Company accumulates the following data concerning a mixed cost, using miles as the activity level.

| | Miles Driven | Total Cost | | Miles Driven | Total Cost |
|---|---|---|---|---|---|
| January | 8,000 | $14,150 | March | 8,500 | $15,000 |
| February | 7,500 | 13,500 | April | 8,200 | 14,490 |

Compute the variable- and fixed-cost elements using the high-low method.

*Determine variable- and fixed-cost elements using the high-low method.*

**BE22.5 (LO 2)** Markowis Corp. has collected the following data concerning its maintenance costs for the past 6 months.

| | Units Produced | Total Cost |
|---|---|---|
| July | 18,000 | $36,000 |
| August | 32,000 | 48,000 |
| September | 36,000 | 55,000 |
| October | 22,000 | 38,000 |
| November | 40,000 | 74,500 |
| December | 38,000 | 62,000 |

Compute the variable- and fixed-cost elements using the high-low method.

*Determine missing amounts for contribution margin.*

**BE22.6 (LO 3)** Determine the missing amounts.

| | Unit Selling Price | Unit Variable Costs | Unit Contribution Margin | Contribution Margin Ratio |
|---|---|---|---|---|
| **1.** | $640 | $352 | (a) | (b) |
| **2.** | $300 | (c) | $93 | (d) |
| **3.** | (e) | (f) | $325 | 25% |

*Prepare CVP income statement.*

**BE22.7 (LO 3)** Russell Inc. had sales of $2,200,000 for the first quarter of 2020. In making the sales, the company incurred the following costs and expenses.

| | Variable | Fixed |
|---|---|---|
| Cost of goods sold | $920,000 | $440,000 |
| Selling expenses | 70,000 | 45,000 |
| Administrative expenses | 86,000 | 98,000 |

Prepare a CVP income statement for the quarter ended March 31, 2020.

*Compute the break-even point.*

**BE22.8 (LO 4)** Rice Company has a unit selling price of $520, variable costs per unit of $286, and fixed costs of $163,800. Compute the break-even point in units using (a) the mathematical equation and (b) unit contribution margin.

*Compute the break-even point.*

**BE22.9 (LO 4)** Presto Corp. had total variable costs of $180,000, total fixed costs of $110,000, and total revenues of $300,000. Compute the required sales in dollars to break even.

*Compute sales for target net income.*

**BE22.10 (LO 5)** For Flynn Company, variable costs are 70% of sales, and fixed costs are $195,000. Management's net income goal is $75,000. Compute the required sales in dollars needed to achieve management's target net income of $75,000. (Use the contribution margin approach.)

*Compute the margin of safety and the margin of safety ratio.*

**BE22.11 (LO 5)** For Astoria Company, actual sales are $1,000,000, and break-even sales are $800,000. Compute (a) the margin of safety in dollars and (b) the margin of safety ratio.

*Compute the required sales in units for target net income.*

**BE22.12 (LO 5)** Deines Corporation has fixed costs of $480,000. It has a unit selling price of $6, unit variable costs of $4.40, and a target net income of $1,500,000. Compute the required sales in units to achieve its target net income.

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*BE22.13 (LO 6) Data for Stiever Corporation's maintenance costs is shown below.

*Compute variable and fixed cost elements using regression.*

| | Units Produced | Total Cost |
|---|---|---|
| July | 18,000 | $32,000 |
| August | 32,000 | 48,000 |
| September | 36,000 | 55,000 |
| October | 22,000 | 38,000 |
| November | 40,000 | 66,100 |
| December | 38,000 | 62,000 |

Compute the variable- and fixed-cost elements using regression analysis. Present your solution in the form of a cost equation. (We recommend that you use the Intercept and Slope functions in Excel.)

## DO IT! Exercises

**DO IT! 22.1 (LO 1)** Amanda Company reports the following total costs at two levels of production.

*Classify types of costs.*

| | 5,000 Units | 10,000 Units |
|---|---|---|
| Indirect labor | $ 3,000 | $ 6,000 |
| Property taxes | 7,000 | 7,000 |
| Direct labor | 28,000 | 56,000 |
| Direct materials | 22,000 | 44,000 |
| Depreciation | 4,000 | 4,000 |
| Utilities | 5,000 | 8,000 |
| Maintenance | 9,000 | 11,000 |

Classify each cost as variable, fixed, or mixed.

**DO IT! 22.2 (LO 2)** Westerville Company accumulates the following data concerning a mixed cost, using units produced as the activity level.

*Compute costs using high-low method and estimate total cost.*

| | Units Produced | Total Cost |
|---|---|---|
| March | 10,000 | $18,000 |
| April | 9,000 | 16,650 |
| May | 10,500 | 18,580 |
| June | 8,800 | 16,200 |
| July | 9,500 | 17,100 |

**a.** Compute the variable- and fixed-cost elements using the high-low method.

**b.** Using the information from your answer to part (a), write the cost formula.

**c.** Estimate the total cost if the company produces 9,200 units.

**DO IT! 22.3 (LO 3)** Cedar Grove Industries produces and sells a cell phone-operated home security control. Information regarding the costs and sales of security controls during May 2020 are provided below.

*Prepare CVP income statement.*

| | |
|---|---|
| Unit selling price of security control | $45 |
| Unit variable costs | $22 |
| Total monthly fixed costs | $120,000 |
| Units sold | 8,000 |

Prepare a CVP income statement for Cedar Grove Industries for the month of May. Provide per unit values and total values.

**DO IT! 22.4 (LO 4)** Snow Cap Company has a unit selling price of $250, variable costs per unit of $170, and fixed costs of $160,000. Compute the break-even point in units using (a) the mathematical equation and (b) unit contribution margin.

*Compute break-even point in units.*

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*Compute break-even point, margin of safety ratio, and sales for target net income.*

**DO IT! 22.5 (LO 5)** Presto Company makes radios that sell for $30 each. For the coming year, management expects fixed costs to total $220,000 and variable costs to be $18 per unit.

**a.** Compute the break-even point in dollars using the contribution margin (CM) ratio.

**b.** Compute the margin of safety ratio assuming actual sales are $800,000.

**c.** Compute the sales dollars required to earn net income of $140,000.

## Exercises

*Define and classify variable, fixed, and mixed costs.*

**E22.1 (LO 1)** Bonita Company manufactures a single product. Annual production costs incurred in the manufacturing process are shown below for two levels of production.

| | Costs Incurred | | | |
|---|---|---|---|---|
| **Production in Units** | **5,000** | | **10,000** | |
| **Production Costs** | **Total Cost** | **Cost/ Unit** | **Total Cost** | **Cost/ Unit** |
| Direct materials | $8,000 | $1.60 | $16,000 | $1.60 |
| Direct labor | 9,500 | 1.90 | 19,000 | 1.90 |
| Utilities | 2,000 | 0.40 | 3,300 | 0.33 |
| Rent | 4,000 | 0.80 | 4,000 | 0.40 |
| Maintenance | 800 | 0.16 | 1,400 | 0.14 |
| Supervisory salaries | 1,000 | 0.20 | 1,000 | 0.10 |

**Instructions**

**a.** Define the terms variable costs, fixed costs, and mixed costs.

**b.** Classify each cost above as either variable, fixed, or mixed.

*Diagram cost behavior, determine relevant range, and classify costs.*

**E22.2 (LO 1)** Shingle Enterprises is considering manufacturing a new product. It projects the cost of direct materials and rent for a range of output as shown below.

| Output in Units | Rent Expense | Direct Materials |
|---|---|---|
| 1,000 | $ 5,000 | $ 4,000 |
| 2,000 | 5,000 | 7,200 |
| 3,000 | 8,000 | 9,000 |
| 4,000 | 8,000 | 12,000 |
| 5,000 | 8,000 | 15,000 |
| 6,000 | 8,000 | 18,000 |
| 7,000 | 8,000 | 21,000 |
| 8,000 | 8,000 | 24,000 |
| 9,000 | 10,000 | 29,300 |
| 10,000 | 10,000 | 35,000 |
| 11,000 | 10,000 | 44,000 |

**Instructions**

**a.** Diagram the behavior of each cost for output ranging from 1,000 to 11,000 units.

**b.** Determine the relevant range of activity for this product.

**c.** Calculate the variable costs per unit within the relevant range.

**d.** Indicate the fixed cost within the relevant range.

*Determine fixed and variable costs using the high-low method and prepare graph.*

**E22.3 (LO 1, 2)** The controller of Norton Industries has collected the following monthly expense data for use in analyzing the cost behavior of maintenance costs.

| Month | Total Maintenance Costs | Total Machine Hours |
|---|---|---|
| January | $2,700 | 300 |
| February | 3,000 | 350 |
| March | 3,600 | 500 |
| April | 4,500 | 690 |
| May | 3,200 | 400 |
| June | 5,500 | 700 |

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**Instructions**

**a.** Determine the fixed- and variable-cost components using the high-low method.

**b.** Prepare a graph showing the behavior of maintenance costs, and identify the fixed- and variable-cost elements. Use 100-hour increments and $1,000 cost increments.

**E22.4 (LO 1)** Family Furniture Corporation incurred the following costs.

*Classify variable, fixed, and mixed costs.*

1. Wood used in the production of furniture.
2. Fuel used in delivery trucks.
3. Straight-line depreciation on factory building.
4. Screws used in the production of furniture.
5. Sales staff salaries.
6. Sales commissions.
7. Property taxes.
8. Insurance on buildings.
9. Hourly wages of furniture craftsmen.
10. Salaries of factory supervisors.
11. Utilities expense.
12. Telephone bill.

**Instructions**

Identify the costs above as variable, fixed, or mixed.

**E22.5 (LO 1, 2)** The controller of Hall Industries has collected the following monthly expense data for use in analyzing the cost behavior of maintenance costs.

*Determine fixed and variable costs using the high-low method and prepare graph.*

| Month | Total Maintenance Costs | Total Machine Hours |
|---|---|---|
| January | $2,640 | 3,500 |
| February | 3,000 | 4,000 |
| March | 3,600 | 6,000 |
| April | 4,500 | 7,900 |
| May | 3,200 | 5,000 |
| June | 4,620 | 8,000 |

**Instructions**

**a.** Determine the fixed- and variable-cost components using the high-low method.

**b.** Prepare a graph showing the behavior of maintenance costs and identify the fixed- and variable-cost elements. Use 2,000-hour increments and $1,000 cost increments.

**E22.6 (LO 1)** PCB Corporation manufactures a single product. Monthly production costs incurred in the manufacturing process are shown below for the production of 3,000 units. The utilities and maintenance costs are mixed costs. The fixed portions of these costs are $300 and $200, respectively.

*Determine fixed, variable, and mixed costs.*

| Production in Units | 3,000 |
|---|---|
| **Production Costs** | |
| Direct materials | $ 7,500 |
| Direct labor | 18,000 |
| Utilities | 2,100 |
| Property taxes | 1,000 |
| Indirect labor | 4,500 |
| Supervisory salaries | 1,900 |
| Maintenance | 1,100 |
| Depreciation | 2,400 |

**Instructions**

**a.** Identify the above costs as variable, fixed, or mixed.

**b.** Calculate the expected costs when production is 5,000 units.

**E22.7 (LO 3)** Writing Marty Moser wants Moser Company to use CVP analysis to study the effects of changes in costs and volume on the company. Marty has heard that certain assumptions must be valid in order for CVP analysis to be useful.

*Explain assumptions underlying CVP analysis.*

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**Instructions**

Prepare a memo to Marty Moser concerning the assumptions that underlie CVP analysis.

*Compute break-even point in units and dollars.*

**E22.8 (LO 3, 4)** Service All That Blooms provides environmentally friendly lawn services for homeowners. Its operating costs are as follows.

| | |
|---|---|
| Depreciation | $1,400 per month |
| Advertising | $200 per month |
| Insurance | $2,000 per month |
| Weed and feed materials | $12 per lawn |
| Direct labor | $10 per lawn |
| Fuel | $2 per lawn |

All That Blooms charges $60 per treatment for the average single-family lawn.

**Instructions**

Determine the company's break-even point in (a) number of lawns serviced per month and (b) dollars.

*Compute break-even point.*

Excel

**E22.9 (LO 3, 4)** Service The Palmer Acres Inn is trying to determine its break-even point during its off-peak season. The inn has 50 rooms that it rents at $60 a night. Operating costs are as follows.

| | |
|---|---|
| Salaries | $5,900 per month |
| Utilities | $1,100 per month |
| Depreciation | $1,000 per month |
| Maintenance | $100 per month |
| Maid service | $14 per room |
| Other costs | $28 per room |

**Instructions**

Determine the inn's break-even point in (a) number of rented rooms per month and (b) dollars.

*Compute contribution margin and break-even point.*

**E22.10 (LO 3, 4)** Service In the month of March, Style Salon services 560 clients at an average price of $120. During the month, fixed costs were $21,024 and variable costs were 60% of sales.

**Instructions**

**a.** Determine the total contribution margin in dollars, the per unit contribution margin, and the contribution margin ratio.

**b.** Using the contribution margin technique, compute the break-even point in dollars and in units.

*Compute break-even point.*

**E22.11 (LO 3, 4)** Service Spencer Kars provides shuttle service between four hotels near a medical center and an international airport. Spencer Kars uses two 10-passenger vans to offer 12 round trips per day. A recent month's activity in the form of a cost-volume-profit income statement is shown below.

| | | |
|---|---|---|
| Sales (1,500 passengers) | | $36,000 |
| Variable costs | | |
| Fuel | $ 5,040 | |
| Tolls and parking | 3,100 | |
| Maintenance | 860 | 9,000 |
| Contribution margin | | 27,000 |
| Fixed costs | | |
| Salaries | 15,700 | |
| Depreciation | 1,300 | |
| Insurance | 1,000 | 18,000 |
| Net income | | $ 9,000 |

**Instructions**

**a.** Calculate the break-even point in (1) dollars and (2) number of passengers.

**b.** Without calculations, determine the contribution margin at the break-even point.

*Compute variable costs per unit, contribution margin ratio, and increase in fixed costs.*

**E22.12 (LO 3, 4)** In 2019, Manhoff Company had a break-even point of $350,000 based on a selling price of $5 per unit and fixed costs of $112,000. In 2020, the selling price and the variable costs per unit did not change, but the break-even point increased to $420,000.

**Instructions**

**a.** Compute the variable costs per unit and the contribution margin ratio for 2019.

**b.** Compute the increase in fixed costs for 2020.

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**E22.13 (LO 3, 4)** Billings Company has the following information available for September 2020. *Prepare CVP income statements.*

| | |
|---|---|
| Unit selling price of video game consoles | $ 400 |
| Unit variable costs | $ 280 |
| Total fixed costs | $54,000 |
| Units sold | 600 |

### Instructions

**a.** Compute the unit contribution margin.

**b.** Prepare a CVP income statement that shows both total and per unit amounts.

**c.** Compute Billings' break-even point in units.

**d.** Prepare a CVP income statement for the break-even point that shows both total and per unit amounts.

**E22.14 (LO 4, 5)** Naylor Company had $210,000 of net income in 2019 when the selling price per unit was $150, the variable costs per unit were $90, and the fixed costs were $570,000. Management expects per unit data and total fixed costs to remain the same in 2020. The president of Naylor Company is under pressure from stockholders to increase net income by $52,000 in 2020. *Compute various components to derive target net income under different assumptions.*

### Instructions

**a.** Compute the number of units sold in 2019.

**b.** Compute the number of units that would have to be sold in 2020 to reach the stockholders' desired profit level.

**c.** Assume that Naylor Company sells the same number of units in 2020 as it did in 2019. What would the selling price have to be in order to reach the stockholders' desired profit level?

**E22.15 (LO 5)** Yams Company reports the following operating results for the month of August: sales $400,000 (units 5,000), variable costs $240,000, and fixed costs $90,000. Management is considering the following independent courses of action to increase net income. *Compute net income under different alternatives.*

1. Increase selling price by 10% with no change in total variable costs or units sold.
2. Reduce variable costs to 55% of sales.

### Instructions

Compute the net income to be earned under each alternative. Which course of action will produce the higher net income?

**E22.16 (LO 4, 5)** Glacial Company estimates that variable costs will be 62.5% of sales, and fixed costs will total $600,000. The selling price of the product is $4. *Prepare a CVP graph and compute break-even point and margin of safety.*

### Instructions

**a.** Compute the break-even point in (1) units and (2) dollars.

**b.** Prepare a CVP graph, assuming maximum sales of $3,200,000. (*Note:* Use $400,000 increments for sales and costs and 100,000 increments for units.)

**c.** Assuming actual sales are $2 million, compute the margin of safety in (1) dollars and (2) as a ratio.

**E22.17 (LO 3, 4, 5)** Felde Bucket Co., a manufacturer of rain barrels, had the following data for 2019: *Determine contribution margin ratio, break-even point in dollars, and margin of safety.*

| | |
|---|---|
| Sales | 2,500 units |
| Sales price | $40 per unit |
| Variable costs | $24 per unit |
| Fixed costs | $19,500 |

### Instructions

**a.** What is the contribution margin ratio?

**b.** What is the break-even point in dollars?

**c.** What is the margin of safety in dollars and as a ratio?

**d.** If the company wishes to increase its total dollar contribution margin by 30% in 2020, by how much will it need to increase its sales if all other factors remain constant?

(CGA adapted)

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*Determine cost components using regression, prepare scatter plot, and estimate cost at particular level of activity.*

***E22.18 (LO 6)** The controller of Standard Industries has collected the following monthly expense data for analyzing the cost behavior of electricity costs.

| | Total Electricity Costs | Total Machine Hours |
|---|---|---|
| January | $2,500 | 300 |
| February | 3,000 | 350 |
| March | 3,600 | 500 |
| April | 4,500 | 690 |
| May | 3,200 | 400 |
| June | 4,900 | 700 |
| July | 4,100 | 650 |
| August | 3,800 | 520 |
| September | 5,100 | 680 |
| October | 4,200 | 630 |
| November | 3,300 | 350 |
| December | 6,100 | 720 |

**Instructions**

**a.** Determine the fixed- and variable-cost components using regression analysis (We recommend the use of Excel.)

**b.** Prepare a scatter plot using Excel. Present the cost equation line estimated in part (a).

**c.** What electricity cost does the cost equation estimate for a level of activity of 500 machine hours? By what amount does this differ from March's observed cost for 500 machine hours?

## Problems: Set A

*Determine cost components using high-low method, and estimate cost at particular level of activity.*

**P22.1A (LO 1, 2)** The controller of Rather Production has collected the following monthly expense data for analyzing the cost behavior of electricity costs.

| | Total Electricity Costs | Total Machine Hours |
|---|---|---|
| January | $2,500 | 300 |
| February | 3,000 | 350 |
| March | 3,600 | 500 |
| April | 4,500 | 690 |
| May | 3,200 | 400 |
| June | 4,900 | 700 |
| July | 4,100 | 650 |
| August | 3,800 | 520 |
| September | 5,100 | 680 |
| October | 4,200 | 630 |
| November | 3,300 | 350 |
| December | 5,860 | 720 |

**Instructions**

**a.** Determine the fixed- and variable-cost components using the high-low method.

**b.** What electricity cost does the cost equation estimate for a level of activity of 500 machine hours? By what amount does this differ from March's observed cost for 500 machine hours?

**c.** What electricity cost does the cost equation estimate for a level of activity of 700 machine hours? By what amount does this differ from June's observed cost for 700 machine hours?

*Determine variable and fixed costs, compute break-even point, prepare a CVP graph, and determine net income.*

**P22.2A (LO 1, 2, 3, 4)** Service Vin Diesel owns the Fredonia Barber Shop. He employs four barbers and pays each a base rate of $1,250 per month. One of the barbers serves as the manager and receives an extra $500 per month. In addition to the base rate, each barber also receives a commission of $4.50 per haircut.

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Other costs are as follows.

| | |
|---|---|
| Advertising | $200 per month |
| Rent | $1,100 per month |
| Barber supplies | $0.30 per haircut |
| Utilities | $175 per month plus $0.20 per haircut |
| Magazines | $25 per month |

Vin currently charges $10 per haircut.

### Instructions

**a.** Determine the variable costs per haircut and the total monthly fixed costs.

a. VC $5

**b.** Compute the break-even point in units and dollars.

**c.** Prepare a CVP graph, assuming a maximum of 1,800 haircuts in a month. Use increments of 300 haircuts on the horizontal axis and $3,000 on the vertical axis.

**d.** Determine net income, assuming 1,600 haircuts are given in a month.

**P22.3A (LO 3, 4, 5)** Jorge Company bottles and distributes B-Lite, a diet soft drink. The beverage is sold for 50 cents per 16-ounce bottle to retailers. For the year 2020, management estimates the following revenues and costs.

*Prepare a CVP income statement, compute break-even point, contribution margin ratio, margin of safety ratio, and sales for target net income.*

Excel

| | | | |
|---|---|---|---|
| Sales | $1,800,000 | Selling expenses—variable | $70,000 |
| Direct materials | 430,000 | Selling expenses—fixed | 65,000 |
| Direct labor | 360,000 | Administrative expenses—variable | 20,000 |
| Manufacturing overhead—variable | 380,000 | Administrative expenses—fixed | 60,000 |
| Manufacturing overhead—fixed | 280,000 | | |

### Instructions

**a.** Prepare a CVP income statement for 2020 based on management's estimates. (Show column for total amounts only.)

**b.** Compute the break-even point in (1) units and (2) dollars.

b. (1) 2,700,000 units

**c.** Compute the contribution margin ratio and the margin of safety ratio. (Round to nearest full percent.)

c. CM ratio 30%

**d.** Determine the sales dollars required to earn net income of $180,000.

**P22.4A (LO 4)** Tanek Corp.'s sales slumped badly in 2020. For the first time in its history, it operated at a loss. The company's income statement showed the following results from selling 500,000 units of product: sales $2,500,000, total costs and expenses $2,600,000, and net loss $100,000. Costs and expenses consisted of the amounts shown below.

*Compute break-even point under alternative courses of action.*

| | Total | Variable | Fixed |
|---|---|---|---|
| Cost of goods sold | $2,140,000 | $1,590,000 | $550,000 |
| Selling expenses | 250,000 | 92,000 | 158,000 |
| Administrative expenses | 210,000 | 68,000 | 142,000 |
| | $2,600,000 | $1,750,000 | $850,000 |

Management is considering the following independent alternatives for 2021.

1. Increase unit selling price 20% with no change in costs, expenses, and sales volume.
2. Change the compensation of salespersons from fixed annual salaries totaling $150,000 to total salaries of $60,000 plus a 5% commission on sales.

### Instructions

**a.** Compute the break-even point in dollars for 2020.

**b.** Compute the break-even point in dollars under each of the alternative courses of action. (Round all ratios to nearest full percent.) Which course of action do you recommend?

b. Alternative 1 $2,023,810

**P22.5A (LO 3, 4, 5)** Mary Willis is the advertising manager for Bargain Shoe Store. She is currently working on a major promotional campaign. Her ideas include the installation of a new lighting system and increased display space that will add $24,000 in fixed costs to the $270,000 currently spent. In addition, Mary is proposing that a 5% price decrease ($40 to $38) will produce a 20% increase in sales volume (20,000 to 24,000). Variable costs will remain at $24 per pair of shoes. Management is impressed

*Compute break-even point and margin of safety ratio, and prepare a CVP income statement before and after changes in business environment.*

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with Mary's ideas but concerned about the effects that these changes will have on the break-even point and the margin of safety.

**Instructions**

**a.** Compute the current break-even point in units, and compare it to the break-even point in units if Mary's ideas are used.

b. Current margin of safety ratio 16%

**b.** Compute the margin of safety ratio for current operations and after Mary's changes are introduced. (Round to nearest full percent.)

**c.** Prepare a CVP income statement for current operations and after Mary's changes are introduced. (Show column for total amounts only.) Would you make the changes suggested?

*Compute contribution margin, fixed costs, break-even point, sales for target net income, and margin of safety ratio.*

**P22.6A (LO 3, 4, 5)** Viejol Corporation has collected the following information after its first year of sales. Sales were $1,600,000 on 100,000 units, selling expenses $250,000 (40% variable and 60% fixed), direct materials $490,000, direct labor $290,000, administrative expenses $270,000 (20% variable and 80% fixed), and manufacturing overhead $380,000 (70% variable and 30% fixed). Top management has asked you to do a CVP analysis so that it can make plans for the coming year. It has projected that unit sales will increase by 10% next year.

**Instructions**

**a.** Compute (1) the contribution margin for the current year and the projected year, and (2) the fixed costs for the current year. (Assume that fixed costs will remain the same in the projected year.)

b. 120,000 units

**b.** Compute the break-even point in units and sales dollars for the current year.

**c.** The company has a target net income of $200,000. What is the required sales in dollars for the company to meet its target?

**d.** If the company meets its target net income number, by what percentage could its sales fall before it is operating at a loss? That is, what is its margin of safety ratio?

*Determine variable and fixed costs.*

**P22.7A (LO 1, 3, 5)** Kaiser Industries carries no inventories. Its product is manufactured only when a customer's order is received. It is then shipped immediately after it is made. For its fiscal year ended October 31, 2020, Kaiser's break-even point was $1.3 million. On sales of $1.2 million, its income statement showed a gross profit of $180,000, direct materials cost of $400,000, and direct labor costs of $500,000. The contribution margin was $144,000, and variable manufacturing overhead was $50,000.

**Instructions**

**a.** Calculate the following:

a. 2. $70,000

**1.** Variable selling and administrative expenses.

**2.** Fixed manufacturing overhead.

**3.** Fixed selling and administrative expenses.

**b.** Ignoring your answer to part (a), assume that fixed manufacturing overhead was $100,000 and the fixed selling and administrative expenses were $80,000. The marketing vice president feels that if the company increased its advertising, sales could be increased by 25%. What is the maximum increased advertising cost the company can incur and still report the same income as before the advertising expenditure?

(CGA adapted)

## Continuing Cases

### Current Designs

**CD22** Bill Johnson, sales manager, and Diane Buswell, controller, at Current Designs are beginning to analyze the cost considerations for one of the composite models of the kayak division. They have provided the following production and operational costs necessary to produce one composite kayak.

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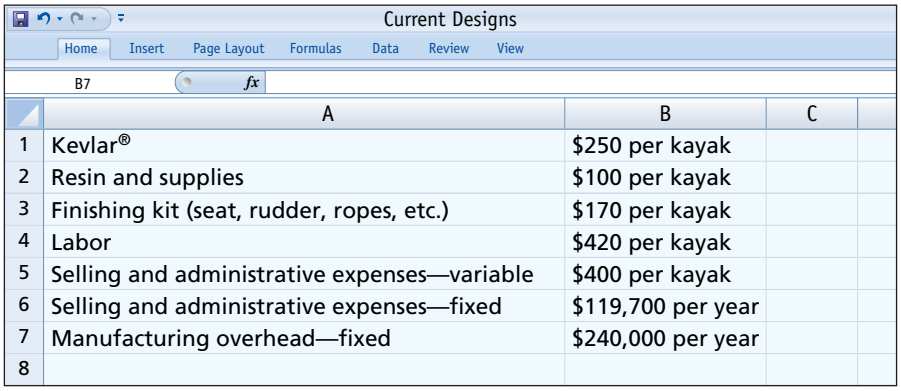


| | A | B | C |
|---|---|---|---|
| 1 | Kevlar® | $250 per kayak | |
| 2 | Resin and supplies | $100 per kayak | |
| 3 | Finishing kit (seat, rudder, ropes, etc.) | $170 per kayak | |
| 4 | Labor | $420 per kayak | |
| 5 | Selling and administrative expenses—variable | $400 per kayak | |
| 6 | Selling and administrative expenses—fixed | $119,700 per year | |
| 7 | Manufacturing overhead—fixed | $240,000 per year | |
| 8 | | | |

Bill and Diane have asked you to provide a cost-volume-profit analysis, to help them finalize the budget projections for the upcoming year. Bill has informed you that the selling price of the composite kayak will be $2,000.

### Instructions

**a.** Calculate variable costs per unit.

**b.** Determine the unit contribution margin.

**c.** Using the unit contribution margin, determine the break-even point in units for this product line.

**d.** Assume that Current Designs plans to earn net income of $270,600 on this product line. Using the unit contribution margin, calculate the number of units that need to be sold to achieve this goal.

**e.** Based on the most recent sales forecast, Current Designs plans to sell 1,000 units of this model. Using your results from part (c), calculate the margin of safety and the margin of safety ratio.

## Waterways

(*Note:* This is a continuation of the Waterways case from Chapters 19–21.)

**WP22** The Vice President for Sales and Marketing at Waterways Corporation is planning for production needs to meet sales demand in the coming year. He is also trying to determine how the company's profits might be increased in the coming year. This problem asks you to use cost-volume-profit concepts to help Waterways understand contribution margins of some of its products and decide whether to mass-produce any of them.

*Go to* **WileyPLUS** *for complete case details and instructions.*

# Expand Your Critical Thinking

## Decision-Making Across the Organization

**CT22.1** Creative Ideas Company has decided to introduce a new product. The new product can be manufactured by either a capital-intensive method or a labor-intensive method. The manufacturing method will not affect the quality of the product. The estimated manufacturing costs by the two methods are as follows.

| | Capital-Intensive | Labor-Intensive |
|---|---|---|
| Direct materials | $5 per unit | $5.50 per unit |
| Direct labor | $6 per unit | $8.00 per unit |
| Variable overhead | $3 per unit | $4.50 per unit |
| Fixed manufacturing costs | $2,524,000 | $1,550,000 |

Creative Ideas' market research department has recommended an introductory unit sales price of $32. The incremental selling expenses are estimated to be $502,000 annually plus $2 for each unit sold, regardless of manufacturing method.

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### Instructions

With the class divided into groups, answer the following.

**a.** Calculate the estimated break-even point in annual unit sales of the new product if Creative Ideas Company uses the:

**1.** Capital-intensive manufacturing method.

**2.** Labor-intensive manufacturing method.

**b.** Determine the annual unit sales volume at which Creative Ideas Company would be indifferent between the two manufacturing methods.

**c.** Explain the circumstance under which Creative Ideas should employ each of the two manufacturing methods.

(CMA adapted)

## Managerial Analysis

**CT22.2** The condensed income statement for the Peri and Paul partnership for 2020 is as follows.

**Peri and Paul Company**
**Income Statement**
**For the Year Ended December 31, 2020**

| | | |
|---|---|---|
| Sales (240,000 units) | | $1,200,000 |
| Cost of goods sold | | 800,000 |
| Gross profit | | 400,000 |
| Operating expenses | | |
| Selling | $280,000 | |
| Administrative | 150,000 | 430,000 |
| Net loss | | $ (30,000) |

A cost behavior analysis indicates that 75% of the cost of goods sold are variable, 42% of the selling expenses are variable, and 40% of the administrative expenses are variable.

### Instructions

(Round to nearest unit, dollar, and percentage, where necessary. Use the CVP income statement format in computing profits.)

**a.** Compute the break-even point in total sales dollars and in units for 2020.

**b.** Peri has proposed a plan to get the partnership "out of the red" and improve its profitability. She feels that the quality of the product could be substantially improved by spending $0.25 more per unit on better raw materials. The selling price per unit could be increased to only $5.25 because of competitive pressures. Peri estimates that sales volume will increase by 25%. What effect would Peri's plan have on the profits and the break-even point in dollars of the partnership? (Round the contribution margin ratio to two decimal places.)

**c.** Paul was a marketing major in college. He believes that sales volume can be increased only by intensive advertising and promotional campaigns. He therefore proposed the following plan as an alternative to Peri's: (1) increase variable selling expenses to $0.59 per unit, (2) lower the selling price per unit by $0.25, and (3) increase fixed selling expenses by $40,000. Paul quoted an old marketing research report that said that sales volume would increase by 60% if these changes were made. What effect would Paul's plan have on the profits and the break-even point in dollars of the partnership?

**d.** Which plan should be accepted? Explain your answer.

## Real-World Focus

**CT22.3 The Coca-Cola Company** hardly needs an introduction. A line taken from the cover of a recent annual report says it all: If you measured time in servings of Coca-Cola, "a billion Coca-Cola's ago was yesterday morning." On average, every U.S. citizen drinks 363 8-ounce servings of Coca-Cola products each year. Coca-Cola's primary line of business is the making and selling of syrup to bottlers. These bottlers then sell the finished bottles and cans of Coca-Cola to the consumer.

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In the annual report of Coca-Cola, the information shown below was provided.

**The Coca-Cola Company**
**Management Discussion**

Our gross margin declined to 61 percent this year from 62 percent in the prior year, primarily due to costs for materials such as sweeteners and packaging.

The increases [in selling expenses] in the last two years were primarily due to higher marketing expenditures in support of our Company's volume growth.

We measure our sales volume in two ways: (1) gallon shipments of concentrates and syrups and (2) unit cases of finished product (bottles and cans of Coke sold by bottlers).

### Instructions

Answer the following questions.

**a.** Are sweeteners and packaging a variable cost or a fixed cost? What is the impact on the contribution margin of an increase in the per unit cost of sweeteners or packaging? What are the implications for profitability?

**b.** In your opinion, are Coca-Cola's marketing expenditures a fixed cost, variable cost, or mixed cost? Give justification for your answer.

**c.** Which of the two measures cited for measuring volume represents the activity index as defined in this chapter? Why might Coca-Cola use two different measures?

## Communication Activity

**CT22.4** Your roommate asks for your help on the following questions about CVP analysis formulas.

**a.** How can the mathematical equation for break-even sales show both sales units and sales dollars?

**b.** How do the formulas differ for unit contribution margin and contribution margin ratio?

**c.** How can contribution margin be used to determine break-even sales in units and in dollars?

### Instructions

Write a memo to your roommate stating the relevant formulas and answering each question.

## Ethics Case

**CT22.5** Scott Bestor is an accountant for Westfield Company. Early this year, Scott made a highly favorable projection of sales and profits over the next 3 years for Westfield's hot-selling computer PLEX. As a result of the projections Scott presented to senior management, the company decided to expand production in this area. This decision led to dislocations of some plant personnel who were reassigned to one of the company's newer plants in another state. However, no one was fired, and in fact the company expanded its workforce slightly.

Unfortunately, Scott rechecked his projection computations a few months later and found that he had made an error that would have reduced his projections substantially. Luckily, sales of PLEX have exceeded projections so far, and management is satisfied with its decision. Scott, however, is not sure what to do. Should he confess his honest mistake and jeopardize his possible promotion? He suspects that no one will catch the error because PLEX sales have exceeded his projections, and it appears that profits will materialize close to his projections.

### Instructions

**a.** Who are the stakeholders in this situation?

**b.** Identify the ethical issues involved in this situation.

**c.** What are the possible alternative actions for Scott? What would you do in Scott's position?

## All About You

**CT22.6** Cost-volume-profit analysis can also be used in making personal financial decisions. For example, the purchase of a new car is one of your biggest personal expenditures. It is important that you carefully analyze your options.

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Suppose that you are considering the purchase of a hybrid vehicle. Let's assume the following facts. The hybrid will initially cost an additional $4,500 above the cost of a traditional vehicle. The hybrid will get 40 miles per gallon of gas, and the traditional car will get 30 miles per gallon. Also, assume that the cost of gas is $3.60 per gallon.

### Instructions

Using the facts above, answer the following questions.

**a.** What is the variable gasoline cost of going one mile in the hybrid car? What is the variable cost of going one mile in the traditional car?

**b.** Using the information in part (a), if "miles" is your unit of measure, what is the "contribution margin" of the hybrid vehicle relative to the traditional vehicle? That is, express the variable cost savings on a per-mile basis.

**c.** How many miles would you have to drive in order to break even on your investment in the hybrid car?

**d.** What other factors might you want to consider?

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Gabriela Hasbun/Redux

# Incremental Analysis

## Chapter Preview

An important purpose of management accounting is to provide managers with relevant information for decision-making. Companies of all sorts must make product decisions. **Oral-B Laboratories** opted to produce a new, higher-priced toothbrush. **General Motors** announced the closure of its Oldsmobile Division. **Quaker Oats** decided to sell off a line of beverages, at a price more than $1 billion less than it paid for that product line only a few years before.

This chapter explains management's decision-making process and a decision-making approach called incremental analysis. The use of incremental analysis is demonstrated in a variety of situations.

## Feature Story

### Keeping It Clean

When you think of new, fast-growing, San Francisco companies, you probably think of fun products like smartphones, social networks, and game apps. You don't tend to think of soap. In fact, given that some of the biggest, most powerful companies in the world dominate the soap market (e.g., **Proctor & Gamble**, **Clorox**, and **Unilever**), starting a new soap company seems like an outrageously bad idea. But that didn't dissuade Adam Lowry and Eric Ryan from giving it a try. The long-time friends and former roommates combined their skills (Adam's chemical engineering and Eric's design and marketing) to start **Method Products**. Their goal: selling environmentally friendly soaps that actually remove dirt.

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Within a year of its formation, the company had products on the shelves at **Target** stores. Within 5 years, Method was cited by numerous business publications as one of the fastest-growing companies in the country. It was easy—right? Wrong. Running a company is never easy, and given Method's commitment to sustainability, all of its business decisions are just a little more complex than usual. For example, the company wanted to use solar power to charge the batteries for the forklifts used in its factories. No problem, just put solar panels on the buildings. But because Method outsources its manufacturing, it doesn't actually own factory buildings. In fact, the company that does Method's manufacturing doesn't own the buildings either. Solution—Method parked old semi-trailers next to the factories and installed solar panels on those.

Since Method insists on using natural products and sustainable production practices, its production costs are higher than companies that don't adhere to these standards. Adam and Eric insist, however, that this actually benefits them because they have to be far more careful about controlling costs and far more innovative in solving problems. Consider Method's most recently developed laundry detergent. It is 8 times stronger than normal detergent, so it can be sold in a substantially smaller package. This reduces both its packaging and shipping costs. In fact, when the cost of the raw materials used for soap production recently jumped by as much as 40%, Method actually viewed it as an opportunity to grab market share. It determined that it could offset the cost increases in other places in its supply chain, thus absorbing the cost much easier than its big competitors.

In these and other instances, Adam and Eric identified their alternative courses of action, determined what was relevant to each choice and what wasn't, and then carefully evaluated the incremental costs of each alternative. When you are small and your competitors have some of the biggest marketing budgets in the world, you can't afford to make very many mistakes.

**Video** **Watch the *Method Products* video in WileyPLUS to learn more about incremental analysis in the real world.**

# Chapter Outline

## LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Describe management's decision-making process and incremental analysis. | • Incremental analysis approach<br>• How incremental analysis works<br>• Qualitative factors<br>• Incremental analysis and ABC<br>• Types of incremental analysis | **DO IT! 1** Incremental Analysis |
| **LO 2** Analyze the relevant costs in accepting an order at a special price. | • Special price<br>• Available capacity | **DO IT! 2** Special Orders |
| **LO 3** Analyze the relevant costs in a make-or-buy decision. | • Make-or-buy<br>• Opportunity cost | **DO IT! 3** Make or Buy |
| **LO 4** Analyze the relevant costs and revenues in determining whether to sell or process materials further. | • Single-product case<br>• Multiple-product case | **DO IT! 4** Sell or Process Further |
| **LO 5** Analyze the relevant costs to be considered in repairing, retaining, or replacing equipment. | • Repair, retain, or replace equipment<br>• Sunk costs | **DO IT! 5** Repair or Replace Equipment |
| **LO 6** Analyze the relevant costs in deciding whether to eliminate an unprofitable segment or product. | • Unprofitable segments<br>• Avoidable fixed costs<br>• Effect of contribution margin | **DO IT! 6** Unprofitable Segments |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with Orion for additional tutorials and practice opportunities.**

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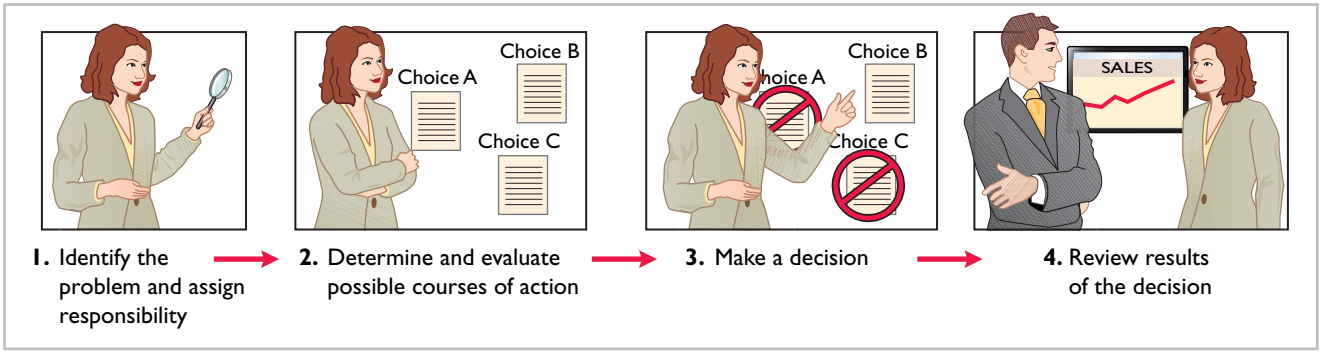
# Decision-Making and Incremental Analysis

**LEARNING OBJECTIVE 1**

Describe management's decision-making process and incremental analysis.

Making decisions is an important management function. Management's decision-making process does not always follow a set pattern because decisions vary significantly in their scope, urgency, and importance. It is possible, though, to identify some steps that are frequently involved in the process. These steps are shown in **Illustration 23.1**.

**ILLUSTRATION 23.1** **Management's decision-making process**


Choice A
Choice B
Choice C
SALES
1. Identify the problem and assign responsibility
2. Determine and evaluate possible courses of action
3. Make a decision
4. Review results of the decision

Accounting's contribution to the decision-making process occurs primarily in Steps 2 and 4—evaluating possible courses of action and reviewing results. In Step 2, for each possible course of action, relevant revenue and cost data are provided. These show the expected overall effect on net income. In Step 4, internal reports are prepared that review the actual impact of the decision.

In making business decisions, management ordinarily considers both financial and nonfinancial information. **Financial** information is related to revenues and costs and their effect on the company's overall profitability. **Nonfinancial** information relates to such factors as the effect of the decision on employee turnover, the environment, or the overall image of the company in the community. (These are considerations that we touched on in our Chapter 19 discussion of corporate social responsibility.) Although nonfinancial information can be as important as financial information, we will focus primarily on financial information that is relevant to the decision.

## Incremental Analysis Approach

**Decisions involve a choice among alternative courses of action.** Suppose you face the personal financial decision of whether to purchase or lease a car. The financial data relate to the cost of leasing versus the cost of purchasing. For example, leasing involves periodic lease payments; purchasing requires "up-front" payment of the purchase price. In other words, the financial information relevant to the decision are the data that vary in the future among the possible alternatives. The process used to identify the financial data that change under alternative courses of action is called **incremental analysis** (see **Alternative Terminology**). In some cases, you will find that when you use incremental analysis, both costs **and** revenues vary. In other cases, only costs **or** revenues vary.

Just as your decision to buy or lease a car affects your future financial situation, similar decisions, on a larger scale, affect a company's future. Incremental analysis identifies the probable effects of those decisions on future earnings. Such analysis inevitably involves estimates and uncertainty. Gathering data for incremental analyses may involve market analysts, engineers, and accountants. In quantifying the data, the accountant must produce the most reliable information available.

**ALTERNATIVE TERMINOLOGY**

**Incremental analysis is also called *differential analysis* because the analysis focuses on differences.**

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## How Incremental Analysis Works

The basic approach in incremental analysis is shown in **Illustration 23.2**.

**ILLUSTRATION 23.2** **Basic approach in incremental analysis**

Incremental Analysis

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D |
|---|---|---|---|---|
| 1 | | Alternative A | Alternative B | Net Income Increase (Decrease) |
| 2 | Revenues | $125,000 | $110,000 | $ (15,000) |
| 3 | Costs | 100,000 | 80,000 | 20,000 |
| 4 | Net income | $ 25,000 | $ 30,000 | $ 5,000 |
| 5 | | | | |

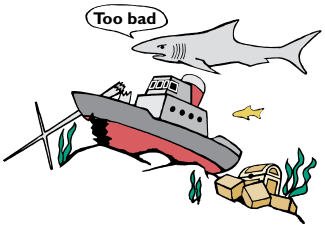
This example compares Alternative B with Alternative A. The net income column shows the differences between the alternatives. In this case, incremental revenue will be $15,000 less under Alternative B than under Alternative A. But a $20,000 incremental cost savings will be realized.[1] Thus, Alternative B will produce $5,000 more net income than Alternative A.

In the following pages, you will encounter three important cost concepts used in incremental analysis, as defined and discussed in **Illustration 23.3**.

**ILLUSTRATION 23.3** **Key cost concepts in incremental analysis**

- **Relevant cost and revenues** In incremental analysis, the only factors to be considered are those costs and revenues that differ across alternatives. Those factors are called **relevant costs and revenues**. Costs and revenues that do not differ across alternatives can be ignored when trying to choose between alternatives.

- **Opportunity cost** Often in choosing one course of action, the company must give up the opportunity to benefit from some other course of action. For example, if a machine is used to make one type of product, the benefit of making another type of product with that machine is lost. This lost potential benefit is referred to as **opportunity cost**.




- **Sunk cost** Costs that have already been incurred and will not be changed or avoided by any present or future decisions are referred to as **sunk costs**. For example, the amount you spent in the past to purchase or repair a laptop should have no bearing on your decision whether to buy a new laptop. **Sunk costs are not relevant costs.**

[1] Although income taxes are sometimes important in incremental analysis, they are ignored in the chapter for simplicity's sake.

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Incremental analysis sometimes involves changes that at first glance might seem contrary to your intuition. For example, sometimes variable costs **do not change** under the alternative courses of action. Also, sometimes fixed costs **do change**. For example, direct labor, normally a variable cost, is not a relevant cost in deciding between the acquisition of two new factory machines if each asset requires the same amount of direct labor. In contrast, rent expense, normally a fixed cost, is a relevant cost in a decision whether to continue occupancy of a building or to purchase or lease a new building.

It is also important to understand that **the approaches to incremental analysis discussed in this chapter do not take into consideration the time value of money**. That is, amounts to be paid or received in future years are not discounted for the cost of interest in this chapter. Time value of money is addressed in Chapter 27 and Appendix G.

## Service Company Insight American Express

Tina Spruce/iStockphoto

### That Letter from AmEx Might Not Be a Bill

No doubt every one of you has received an invitation from a credit card company to open a new account—some of you have probably received three in one day. But how many of you have received an offer of $300 to close out your credit card account? **American Express** decided to offer some of its customers $300 if they would give back their credit card. You could receive the $300 even if you hadn't paid off your balance yet, as long as you agreed to give up your credit card. Apparently, these customers cost more than they are worth.

**Source:** Aparajita Saha-Bubna and Lauren Pollock, "AmEx Offers Some Holders $300 to Pay and Leave," *Wall Street Journal Online* (February 23, 2009).

**What are the relevant costs that American Express would need to know in order to determine to whom to make this offer? (Go to WileyPLUS for this answer and additional questions.)**

## Qualitative Factors

In this chapter, we focus primarily on the quantitative factors that affect a decision—those attributes that can be easily expressed in terms of numbers or dollars. However, many of the decisions involving incremental analysis have important qualitative features. Though not easily measured, they should not be ignored.

Consider, for example, the potential effects of the make-or-buy decision or of the decision to eliminate a line of business on existing employees and the community in which the plant is located. The cost savings that may be obtained from outsourcing or from eliminating a plant should be weighed against these qualitative attributes. One example would be the cost of lost morale that might result. Al "Chainsaw" Dunlap was a so-called "turnaround" artist who went into many companies, identified inefficiencies (using incremental analysis techniques), and tried to correct these problems to improve corporate profitability. Along the way, he laid off thousands of employees at numerous companies. As head of **Sunbeam**, it was Al Dunlap who lost his job because his Draconian approach failed to improve Sunbeam's profitability. It was reported that Sunbeam's employees openly rejoiced for days after his departure. Clearly, qualitative factors can matter.

## Relationship of Incremental Analysis and Activity-Based Costing

Many companies have shifted to activity-based costing to allocate overhead costs to products. The primary reason for using activity-based costing is that it results in a more accurate allocation of overhead. The concepts presented in this chapter are completely consistent with the use of activity-based costing. In fact, activity-based costing results in better identification of relevant costs and, therefore, better incremental analysis.

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## Types of Incremental Analysis

A number of different types of decisions involve incremental analysis. The more common types of decisions are whether to:

1. Accept an order at a special price.
2. Make or buy component parts or finished products.
3. Sell products or process them further.
4. Repair, retain, or replace equipment.
5. Eliminate an unprofitable business segment or product.

We consider each of these types of decisions in the following pages.

### DO IT! 1 | Incremental Analysis

Owen T Corporation is comparing two different options. The company currently operates under Option 1, with revenues of $80,000 per year, maintenance expenses of $5,000 per year, and operating expenses of $38,000 per year. Option 2 provides revenues of $80,000 per year, maintenance expenses of $12,000 per year, and operating expenses of $32,000 per year. Option 1 employs a piece of equipment that was upgraded 2 years ago at a cost of $22,000. If Option 2 is chosen, it will free up resources that will increase revenues by $3,000.

Complete the following table to show the change in income from choosing Option 2 versus Option 1. Designate any sunk costs with an "S."

| | Option 1 | Option 2 | Net Income Increase (Decrease) | Sunk (S) |
|---|---|---|---|---|
| Revenues | | | | |
| Maintenance expenses | | | | |
| Operating expenses | | | | |
| Equipment upgrade | | | | |
| Opportunity cost | | | | |

**ACTION PLAN**

- Past costs that cannot be changed as a result of any present or future action are sunk costs.
- Benefits lost by choosing one option over another are opportunity costs.

**Solution**

| | Option 1 | Option 2 | Net Income Increase (Decrease) | Sunk (S) |
|---|---|---|---|---|
| Revenues | $80,000 | $80,000 | $ 0 | |
| Maintenance expenses | 5,000 | 12,000 | (7,000) | |
| Operating expenses | 38,000 | 32,000 | 6,000 | |
| Equipment upgrade | 22,000 | 0 | 0 | S |
| Opportunity cost | 3,000 | 0 | 3,000 | |
| | | | $ 2,000 | |

Related exercise material: **BE23.1, BE23.2, DO IT! 23.1, E23.1, and E23.18.**

# Special Orders

**LEARNING OBJECTIVE 2**

Analyze the relevant costs in accepting an order at a special price.

Sometimes a company has an opportunity to obtain additional business if it is willing to make a price concession to a specific customer. To illustrate, assume that Sunbelt Company produces 100,000 Smoothie blenders per month, which is 80% of plant capacity. Variable manufacturing

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costs are $8 per unit. Fixed manufacturing costs are $400,000, or $4 per unit. The Smoothie blenders are normally sold directly to retailers at $20 each. Sunbelt has an offer from Kensington Co. (a foreign wholesaler) to purchase an additional 2,000 blenders at $11 per unit. Acceptance of the offer would not affect normal sales of the product, and the additional units can be manufactured without increasing plant capacity. What should management do?

If management makes its decision on the basis of the total cost per unit of $12 ($8 variable + $4 fixed), the order would be rejected because costs per unit ($12) exceed revenues per unit ($11) by $1 per unit. However, since the units can be produced within existing plant capacity, the special order **will not increase fixed costs**. Let's identify the relevant data for the decision. First, the variable manufacturing costs increase $16,000 ($8 × 2,000). Second, the expected revenue increases $22,000 ($11 × 2,000). Thus, as shown in **Illustration 23.4**, Sunbelt increases its net income by $6,000 by accepting this special order (see **Helpful Hint**).

**HELPFUL HINT**

**This is a good example of different costs for different purposes. In the long run all costs are relevant, but for this decision only costs that change are relevant.**

**ILLUSTRATION 23.4** **Incremental analysis—accepting an order at a special price**

Incremental Analysis - Accepting an order at a special price

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D |
|---|---|---|---|---|
| 1 | | Reject Order | Accept Order | Net Income Increase (Decrease) |
| 2 | Revenues | $0 | $22,000 | $ 22,000 |
| 3 | Costs | 0 | 16,000 | (16,000) |
| 4 | Net income | $0 | $ 6,000 | $ 6,000 |
| 5 | | | | |

Two points should be emphasized. First, we assume that sales of the product in other markets **would not be affected by this special order**. If other sales were affected, then Sunbelt would have to consider the change in profit due to lost sales in making the decision. Second, if Sunbelt is operating **at full capacity**, it is likely that the special order would be rejected. Under such circumstances, the company would have to expand plant capacity. In that case, the special order would have to absorb these additional fixed manufacturing costs, as well as the variable manufacturing costs.

## DO IT! 2 | Special Orders

Cobb Company incurs costs of $28 per unit ($18 variable and $10 fixed) to make a product that normally sells for $42. A foreign wholesaler offers to buy 5,000 units at $25 each. The special order results in additional shipping costs of $1 per unit. Compute the increase or decrease in net income Cobb realizes by accepting the special order, assuming Cobb has excess operating capacity. Should Cobb Company accept the special order?

**ACTION PLAN**

- **Identify all revenues that would change as a result of accepting the order.**
- **Identify all costs that would change as a result of accepting the order, and net this amount against the change in revenues.**

### Solution

| | Reject | Accept | Net Income Increase (Decrease) |
|---|---|---|---|
| Revenues | $–0– | $125,000* | $125,000 |
| Costs | –0– | 95,000** | (95,000) |
| Net income | $–0– | $ 30,000 | $ 30,000 |

*5,000 × $25
**(5,000 × $18) + (5,000 × $1)

The analysis indicates net income increases by $30,000; therefore, Cobb Company should accept the special order.

Related exercise material: **BE23.3, DO IT! 23.2, E23.2, E23.3, and E23.4.**

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# Make or Buy

**LEARNING OBJECTIVE 3**

Analyze the relevant costs in a make-or-buy decision.

When a manufacturer assembles component parts in producing a finished product, management must decide whether to make or buy the components. The decision to buy parts or services is often referred to as outsourcing. For example, as discussed in the Feature Story, a company such as **Method Products** may either make or buy the soaps used in its products. Similarly, **Hewlett-Packard Corporation** may make or buy the electronic circuitry, cases, and printer heads for its printers. **Boeing** recently sold some of its commercial aircraft factories in an effort to cut production costs and focus on engineering and final assembly rather than manufacturing. The decision to make or buy components should be made on the basis of incremental analysis.

Baron Company makes motorcycles and scooters. Illustration 23.5 shows the annual costs it incurs in producing 25,000 ignition switches for scooters.

**ILLUSTRATION 23.5**
**Annual product cost data**

| | |
|---|---|
| Direct materials | $ 50,000 |
| Direct labor | 75,000 |
| Variable manufacturing overhead | 40,000 |
| Fixed manufacturing overhead | 60,000 |
| Total manufacturing costs | $225,000 |
| **Total cost per unit ($225,000 ÷ 25,000)** | **$9.00** |

Instead of making its own switches, Baron Company might purchase the ignition switches from Ignition, Inc. at a price of $8 per unit. What should management do?

At first glance, it appears that management should purchase the ignition switches for $8 rather than make them at a cost of $9. However, a review of operations indicates that if the ignition switches are purchased from Ignition, Inc., *all* of Baron's variable costs but only $10,000 of its fixed manufacturing costs will be eliminated (avoided). Thus, $50,000 of the fixed manufacturing costs remain if the ignition switches are purchased. The relevant costs for incremental analysis, therefore, are as shown in Illustration 23.6.

**ILLUSTRATION 23.6** **Incremental analysis—make or buy**

Incremental Analysis - Make or buy

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D |
|---|---|---|---|---|
| 1 | | Make | Buy | Net Income Increase (Decrease) |
| 2 | Direct materials | $ 50,000 | $ 0 | $ 50,000 |
| 3 | Direct labor | 75,000 | 0 | 75,000 |
| 4 | Variable manufacturing costs | 40,000 | 0 | 40,000 |
| 5 | Fixed manufacturing costs | 60,000 | 50,000 | 10,000 |
| 6 | Purchase price (25,000 × $8) | 0 | 200,000 | (200,000) |
| 7 | Total annual cost | $225,000 | $250,000 | $ (25,000) |
| 8 | | | | |

This analysis indicates that Baron Company incurs $25,000 of additional costs by buying the ignition switches rather than making them. Therefore, Baron should continue to make the ignition switches even though the total manufacturing cost is $1 higher per unit than the purchase

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price. The primary cause of this result is that, even if the company purchases the ignition switches, it will still have fixed costs of $50,000 to absorb.

## Opportunity Cost

The foregoing make-or-buy analysis is complete only if it is assumed that the productive capacity used to make the ignition switches cannot be converted to another purpose. If there is an opportunity to use this productive capacity in some other manner, then this opportunity cost must be considered. As indicated earlier, **opportunity cost** is the lost potential benefit that could have been obtained by following an alternative course of action (see **Ethics Note**).

To illustrate, assume that through buying the switches, Baron Company can use the released productive capacity to generate additional income of $38,000 from producing a different product. This lost income is an additional cost of continuing to make the switches in the make-or-buy decision. This opportunity cost is therefore added to the "Make" column for comparison. As shown in **Illustration 23.7**, it is now advantageous to buy the ignition switches because the company's income would increase by $13,000.

**ETHICS NOTE**

**In the make-or-buy decision, it is important for management to take into account the social impact of its choice. For instance, buying may be the most economically feasible solution, but such action could result in the closure of a manufacturing plant and laying off many good workers.**

**ILLUSTRATION 23.7** **Incremental analysis—make or buy, with opportunity cost**

Incremental Analysis - Make or buy with opportunity cost

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D |
|---|---|---|---|---|
| 1 | | Make | Buy | Net Income Increase (Decrease) |
| 2 | Total annual cost | $225,000 | $250,000 | $(25,000) |
| 3 | Opportunity cost | 38,000 | 0 | 38,000 |
| 4 | Total cost | $263,000 | $250,000 | $ 13,000 |
| 5 | | | | |

The qualitative factors in this decision include the possible loss of jobs for employees who produce the ignition switches. In addition, management must assess the supplier's ability to satisfy the company's quality control standards at the quoted price per unit on a timely basis.

## Service Company Insight Amazon.com

iStockphoto

### Giving Away the Store?

**Amazon.com** has experienced incredible growth. However, some analysts have questioned whether some of the methods that Amazon uses to increase its sales make good business sense. For example, a few years ago, Amazon initiated a "Prime" free-shipping subscription program. For a $99 fee per year, Amazon's customers get free shipping on as many goods as they want to buy. At the time, CEO Jeff Bezos promised that the program would be costly in the short-term but benefit the company in the long-term. Six years later, it was true that Amazon's sales had grown considerably. It was also estimated that its Prime customers buy two to three times as much as non-Prime customers. But, its shipping costs rose from 2.8% of sales to 4% of sales, which is remarkably similar to the drop in its gross margin from 24% to 22.3%. Amazon's order fulfillment center uses 30,000 robots and more than 100 million square feet of space. It generates significant fees from merchants that sell on its site and rely on its fulfillment services.

**Sources:** Martin Peers, "Amazon's Prime Numbers," *Wall Street Journal Online* (February 3, 2011); and Evan Niu, "Ever Wonder How Amazon.com Pays for All of That Free Shipping?" *The Motley Fool* (October 26, 2015).

**What are the relevant revenues and costs that Amazon should consider relative to the decision whether to offer the Prime free-shipping subscription? (Go to WileyPLUS for this answer and additional questions.)**

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## DO IT! 3 | Make or Buy

Juanita Company must decide whether to make or buy some of its components for the appliances it produces. The costs of producing 166,000 electrical cords for its appliances are as follows.

| | | | |
|---|---|---|---|
| Direct materials | $90,000 | Variable overhead | $32,000 |
| Direct labor | $20,000 | Fixed overhead | $24,000 |

Instead of making the electrical cords at an average cost per unit of $1.00 ($166,000 ÷ 166,000), the company has an opportunity to buy the cords at $0.90 per unit. If the company purchases the cords, all variable costs and one-fourth of the fixed costs are eliminated.

**a.** Prepare an incremental analysis showing whether the company should make or buy the electrical cords.

**b.** Will your answer be different if the released productive capacity of the production facility will generate additional income of $5,000?

**ACTION PLAN**

- Look for the costs that change.
- Ignore the costs that do not change.
- Use the format in the chapter for your answer.
- Recognize that opportunity cost can make a difference.

### Solution

**a.**

| | Make | Buy | Net Income Increase (Decrease) |
|---|---|---|---|
| Direct materials | $ 90,000 | $ –0– | $ 90,000 |
| Direct labor | 20,000 | –0– | 20,000 |
| Variable manufacturing costs | 32,000 | –0– | 32,000 |
| Fixed manufacturing costs | 24,000 | 18,000* | 6,000 |
| Purchase price | –0– | 149,400** | (149,400) |
| Total cost | $166,000 | $167,400 | $ (1,400) |

*$24,000 × .75
**166,000 × $0.90

This analysis indicates that Juanita Company will incur $1,400 of additional costs if it buys the electrical cords rather than making them.

**b.**

| | Make | Buy | Net Income Increase (Decrease) |
|---|---|---|---|
| Total cost | $166,000 | $167,400 | $(1,400) |
| Opportunity cost | 5,000 | –0– | 5,000 |
| Total cost | $171,000 | $167,400 | $ 3,600 |

Yes, the answer is different. The analysis shows that net income increases by $3,600 if Juanita Company purchases the electrical cords rather than making them.

Related exercise material: **BE23.4, DO IT! 23.3, E23.5, E23.6, E23.7, and E23.8.**

# Sell or Process Further

**LEARNING OBJECTIVE 4**

Analyze the relevant costs and revenues in determining whether to sell or process materials further.

Many manufacturers have the option of selling products at a given point in the production cycle or continuing to process with the expectation of selling them at a later point at a higher price. For example, a bicycle manufacturer such as **Trek** could sell its bicycles to retailers either unassembled or assembled. A furniture manufacturer such as **IKEA** could sell its

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furniture to stores either unfinished or finished. The sell-or-process-further decision should be made on the basis of incremental analysis. The basic decision rule is: **Process further as long as the incremental revenue from such processing exceeds the incremental processing costs.**

## Single-Product Case

Assume, for example, that Woodmasters Inc. makes tables. It sells unfinished tables for $50. The cost to manufacture an unfinished table is $35, computed as shown in Illustration 23.8.

**ILLUSTRATION 23.8** **Per unit cost of unfinished table**

| | |
|---|---|
| Direct materials | $15 |
| Direct labor | 10 |
| Variable manufacturing overhead | 6 |
| Fixed manufacturing overhead | 4 |
| **Manufacturing cost per unit** | **$35** |

Woodmasters currently has unused productive capacity that is expected to continue indefinitely. Some of this capacity could be used to finish the tables and sell them at $60 per unit. For a finished table, direct materials will increase $2 and direct labor costs will increase $4. Variable manufacturing overhead costs will increase by $2.40 (60% of direct labor). No increase is anticipated in fixed manufacturing overhead.

Should the company sell the unfinished tables, or should it process them further (see Helpful Hint)? Illustration 23.9 shows the incremental analysis on a per unit basis.

**HELPFUL HINT**

Current net income is known. Net income from processing further is an estimate. In making its decision, management could add a "risk" factor for the estimate.

**ILLUSTRATION 23.9** **Incremental analysis—sell or process further**

Incremental Analysis - Sell or process further

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D |
|---|---|---|---|---|
| 1 | | Sell Unfinished | Process Further | Net Income Increase (Decrease) |
| 2 | Sales price per unit | $50.00 | $60.00 | $10.00 |
| 3 | Cost per unit | | | |
| 4 | Direct materials | 15.00 | 17.00 | (2.00) |
| 5 | Direct labor | 10.00 | 14.00 | (4.00) |
| 6 | Variable manufacturing overhead | 6.00 | 8.40 | (2.40) |
| 7 | Fixed manufacturing overhead | 4.00 | 4.00 | 0.00 |
| 8 | Total | 35.00 | 43.40 | (8.40) |
| 9 | Net income per unit | $15.00 | $16.60 | $ 1.60 |
| 10 | | | | |

It would be advantageous for Woodmasters to process the tables further. The incremental revenue of $10.00 from the additional processing is $1.60 higher than the incremental processing costs of $8.40.

## Multiple-Product Case

Sell-or-process-further decisions are particularly applicable to processes that produce multiple products simultaneously. In many industries, a number of end-products are produced from a single raw material and a common production process. These multiple end-products are commonly referred to as **joint products**. For example, in the meat-packing industry, **Armour** processes a cow or pig into meat, internal organs, hides, bones, and fat products. In the petroleum industry, **ExxonMobil** refines crude oil to produce gasoline, lubricating oil, kerosene, paraffin, and ethylene.

Illustration 23.10 presents a joint product situation for Marais Creamery involving a decision **to sell or process further** cream and skim milk. Cream and skim milk are joint products that result from the processing of raw milk.

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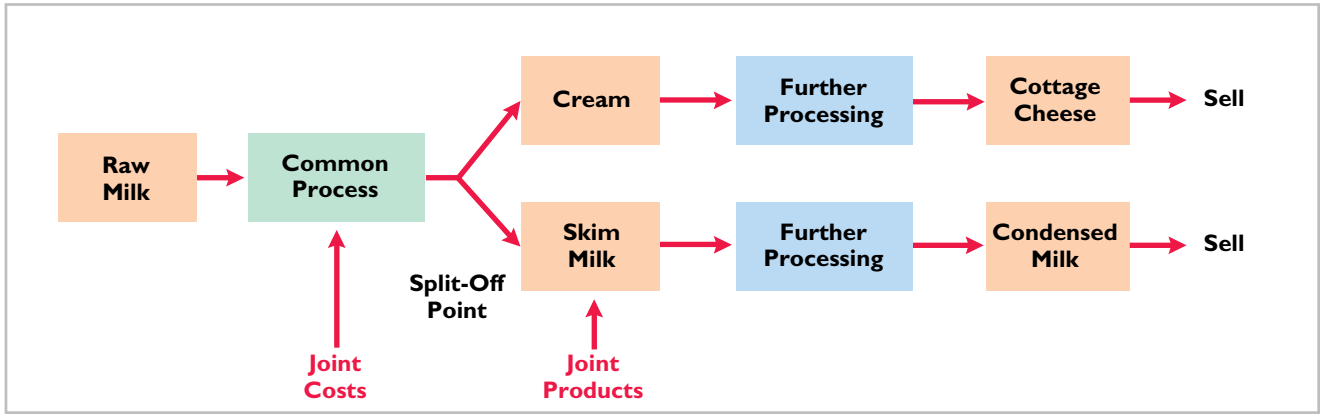
**ILLUSTRATION 23.10** **Joint production process—Creamery**




Marais incurs many costs prior to the manufacture of the cream and skim milk. All costs incurred prior to the point at which the two products are separately identifiable (the **split-off point**) are called **joint costs**. For purposes of determining the cost of each product, joint product costs must be allocated to the individual products. This is frequently done based on the relative sales value of the joint products. While this allocation is important for determination of product cost, **it is irrelevant for any sell-or-process-further decisions**. The reason is that these **joint product costs are sunk costs**. That is, they have already been incurred, and they cannot be changed or avoided by any subsequent decision.

Illustration 23.11 provides the daily cost and revenue data for Marais Creamery related to cream and cottage cheese.

**ILLUSTRATION 23.11**
**Cost and revenue data per day for cream**

| Costs (per day) | |
|---|---|
| Joint cost allocated to cream | $ 9,000 |
| Cost to process cream into cottage cheese | 10,000 |
| **Revenues from Products (per day)** | |
| Cream | $19,000 |
| Cottage cheese | 27,000 |

From this information, we can determine whether the company should simply sell the cream or process it further into cottage cheese. Illustration 23.12 shows the necessary analysis. Note that the joint cost that is allocated to the cream is not included in this decision. It is not relevant to the decision because it is a sunk cost. It has been incurred in the past and will remain the same no matter whether the cream is subsequently processed into cottage cheese or not.

**ILLUSTRATION 23.12** **Analysis of whether to sell cream or process into cottage cheese**

Incremental Analysis - Sell or process further - Cream or cottage cheese

Home Insert Page Layout Formulas Data Review View

P18 *fx*

| | A | B | C | D |
|---|---|---|---|---|
| 1 | | Sell | Process Further | Net Income Increase (Decrease) |
| 2 | Sales per day | $19,000 | $27,000 | $ 8,000 |
| 3 | Cost per day to process cream into cottage cheese | 0 | 10,000 | (10,000) |
| 4 | Net income per day | $19,000 | $17,000 | $ (2,000) |
| 5 | | | | |

From this analysis, we can see that Marais should not process the cream further because it will sustain an incremental loss of $2,000.

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**Illustration 23.13** provides the daily cost and revenue data for the company related to skim milk and condensed milk.

**ILLUSTRATION 23.13**
**Cost and revenue data per day for skim milk**

| Costs (per day) | |
|---|---|
| Joint cost allocated to skim milk | $ 5,000 |
| Cost to process skim milk into condensed milk | 8,000 |
| **Revenues from Products (per day)** | |
| Skim milk | $11,000 |
| Condensed milk | 26,000 |

**Illustration 23.14** shows that Marais Company should process the skim milk into condensed milk, as it will increase net income by $7,000.

**ILLUSTRATION 23.14** **Analysis of whether to sell skim milk or process into condensed milk**

Incremental Analysis - Sell or process further - Skim milk or condensed milk

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D |
|---|---|---|---|---|
| 1 | | Sell | Process Further | Net Income Increase (Decrease) |
| 2 | Sales per day | $11,000 | $26,000 | $15,000 |
| 3 | Cost per day to process skim milk into condensed milk | 0 | 8,000 | (8,000) |
| 4 | Net income per day | $11,000 | $18,000 | $ 7,000 |
| 5 | | | | |

Again, note that the $5,000 of joint cost allocated to the skim milk is irrelevant in deciding whether to sell or process further. Why? The joint cost remains the same, whether or not further processing is performed.

These decisions need to be reevaluated as market conditions change. For example, if the price of skim milk increases relative to the price of condensed milk, it may become more profitable to sell the skim milk rather than process it into condensed milk. Consider also oil refineries. As market conditions change, the companies must constantly re-assess which products to produce from the oil they receive at their plants.

## DO IT! 4 | Sell or Process Further

Easy Does It manufactures unpainted furniture for the do-it-yourself (DIY) market. It currently sells a child's rocking chair for $25. Production costs per unit are $12 variable and $8 fixed. Easy Does It is considering painting the rocking chair and selling it for $35. Variable costs to paint each chair are expected to be $9, and fixed costs are expected to be $2.

Prepare an analysis showing whether Easy Does It should sell unpainted or painted chairs.

**ACTION PLAN**

- Identify the revenues that change as a result of painting the rocking chair.
- Identify all costs that change as a result of painting the rocking chair, and net the amount against the revenues.

### Solution

| | Sell | Process Further | Net Income Increase (Decrease) |
|---|---|---|---|
| Revenues | $25 | $35 | $10 |
| Variable costs | 12 | 21[a] | (9) |
| Fixed costs | 8 | 10[b] | (2) |
| Net income | $ 5 | $ 4 | $ (1) |

[a]$12 + $9 [b]$8 + $2

The analysis indicates that the rocking chair should be sold unpainted because net income per chair will be $1 greater.

Related exercise material: **BE23.5, BE23.6, DO IT! 23.4, E23.9, E23.10, E23.11, and E23.12.**

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# Repair, Retain, or Replace Equipment

**LEARNING OBJECTIVE 5**

Analyze the relevant costs to be considered in repairing, retaining, or replacing equipment.

Management often has to decide whether to continue using an asset, repair, or replace it. For example, **Delta Airlines** must decide whether to replace old jets with new, more fuel-efficient ones. To illustrate, assume that Jeffcoat Company has a factory machine that originally cost $110,000. It has a balance in Accumulated Depreciation of $70,000, so the machine's book value is $40,000. It has a remaining useful life of four years. The company is considering replacing this machine with a new machine. A new machine is available that costs $120,000. It is expected to have zero salvage value at the end of its four-year useful life. If the new machine is acquired, variable manufacturing costs are expected to decrease from $160,000 to $125,000 annually, and the old unit could be sold for $5,000. Illustration 23.15 shows the incremental analysis for the **four-year period**.

**ILLUSTRATION 23.15** **Incremental analysis—retain or replace equipment**

Incremental Analysis - Retain or replace equipment

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | | Retain Equipment | | Replace Equipment | | Net Income Increase (Decrease) |
| 2 | Variable manufacturing costs | $640,000 | a | $500,000 | b | $140,000 |
| 3 | New machine cost | | | 120,000 | | (120,000) |
| 4 | Sale of old machine | | | (5,000) | | 5,000 |
| 5 | Total | $640,000 | | $615,000 | | $ 25,000 |
| 6 | | | | | | |
| 7 | [a](4 years × $160,000) | | | | | |
| 8 | [b](4 years × $125,000) | | | | | |
| 9 | | | | | | |

In this case, it would be to the company's advantage to replace the equipment. The lower variable manufacturing costs due to replacement more than offset the cost of the new equipment. Note that the $5,000 received from the sale of the old machine is relevant to the decision because it will only be received if the company chooses to replace its equipment. In general, any trade-in allowance or cash disposal value of existing assets is relevant to the decision to retain or replace equipment.

One other point should be mentioned regarding Jeffcoat's decision: **The book value of the old machine does not affect the decision.** Book value is a **sunk cost**, which is a cost that cannot be changed by any present or future decision. **Sunk costs are not relevant in incremental analysis.** In this example, if the asset is retained, book value will be depreciated over its remaining useful life. Or, if the new unit is acquired, book value will be recognized as a loss of the current period. Thus, the effect of book value on cumulative future earnings is the same regardless of the replacement decision.

Sometimes, decisions regarding whether to replace equipment are clouded by behavioral decision-making errors. For example, suppose a manager spent $90,000 repairing a machine two months ago. Suppose that the machine now breaks down again. The manager might be inclined to think that because the company recently spent a large amount of money to repair the machine, the machine should be repaired again rather than replaced. However, the amount spent in the past to repair the machine is irrelevant to the current decision. It is a sunk cost.

Similarly, suppose a manager spent $5,000,000 to purchase a machine. Six months later, a new machine comes on the market that is significantly more efficient than the one recently purchased. The manager might be inclined to think that he or she should not buy the new

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machine because of the recent purchase. In fact, the manager might fear that buying a different machine so quickly might call into question the merit of the previous decision. Again, the fact that the company recently bought a machine is not relevant. Instead, the manager should use incremental analysis to determine whether the savings generated by the efficiencies of the new machine would justify its purchase.

### DO IT! 5 | Repair or Replace Equipment

Rochester Roofing is faced with a decision. The company relies very heavily on the use of its 60-foot extension lift for work on large homes and commercial properties. Last year, the company spent $60,000 refurbishing the lift. It has just determined that another $40,000 of repair work is required. Alternatively, Rochester Roofing has found a newer used lift that is for sale for $170,000. The company estimates that both the old and new lifts would have useful lives of 6 years. However, the new lift is more efficient and thus would reduce operating expenses by about $20,000 per year. The company could also rent out the new lift for about $2,000 per year. The old lift is not suitable for rental. The old lift could currently be sold for $25,000 if the new lift is purchased. Prepare an incremental analysis that shows whether the company should repair or replace the equipment.

**ACTION PLAN**

- Those costs and revenues that differ across the alternatives are relevant to the decision.
- Past costs that cannot be changed are sunk costs.

**Solution**

| | Retain Equipment | Replace Equipment | Net Income Increase (Decrease) |
|---|---|---|---|
| Operating expenses | $120,000* | | $120,000 |
| Repair costs | 40,000 | | 40,000 |
| Rental revenue | | $ (12,000)** | 12,000 |
| New machine cost | | 170,000 | (170,000) |
| Sale of old machine | | (25,000) | 25,000 |
| Total cost | $160,000 | $133,000 | $ 27,000 |

*(6 years × $20,000)
**(6 years × $2,000)

The analysis indicates that purchasing the new machine would increase net income for the 6-year period by $27,000.

Related exercise material: **BE23.7, DO IT! 23.5, E23.13, and E23.14.**

## Eliminate Unprofitable Segment or Product

**LEARNING OBJECTIVE 6**

Analyze the relevant costs in deciding whether to eliminate an unprofitable segment or product.

Management sometimes must decide whether to eliminate an unprofitable business segment or product. For example, in recent years, many airlines quit servicing certain cities or cut back on the number of flights. **Goodyear** quit producing several brands in the low-end tire market. Again, the key is to **focus on the relevant costs—the data that change under the alternative courses of action** (see **Helpful Hint**). To illustrate, assume that Venus Company manufactures tennis racquets in three models: Pro, Master, and Champ. Pro and Master are profitable lines. Champ (highlighted in red in the table below) operates at a loss. Condensed income statement data are as shown in **Illustration 23.16**.

**HELPFUL HINT**

A decision to discontinue a segment based solely on the bottom line—net loss—is inappropriate.

You might think that total net income will increase by $20,000 to $240,000 if the unprofitable Champ line of racquets is eliminated. However, **net income may actually decrease if the Champ line is discontinued**. The reason is that the company's total fixed costs will be the same whether or not the Champ line is discontinued. That is, the fixed costs allocated to the Champ racquets cannot be eliminated, so they will have to be absorbed by the other products.

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**ILLUSTRATION 23.16**
**Segment income data**

| | Pro | Master | Champ | Total |
|---|---|---|---|---|
| Sales | $800,000 | $300,000 | $100,000 | $1,200,000 |
| Variable costs | 520,000 | 210,000 | 90,000 | 820,000 |
| Contribution margin | 280,000 | 90,000 | 10,000 | 380,000 |
| Fixed costs | 80,000 | 50,000 | 30,000 | 160,000 |
| Net income | $200,000 | $ 40,000 | $ (20,000) | $ 220,000 |

To illustrate, assume that the $30,000 of fixed costs applicable to the unprofitable segment are instead allocated ⅔ to the Pro model and ⅓ to the Master model if the Champ model is eliminated. Fixed costs will increase to $100,000 ($80,000 + $20,000) in the Pro line and to $60,000 ($50,000 + $10,000) in the Master line. **Illustration 23.17** shows the revised income statement.

**ILLUSTRATION 23.17**
**Income data after eliminating unprofitable product line**

| | Pro | Master | Total |
|---|---|---|---|
| Sales | $800,000 | $300,000 | $1,100,000 |
| Variable costs | 520,000 | 210,000 | 730,000 |
| Contribution margin | 280,000 | 90,000 | 370,000 |
| Fixed costs | 100,000 | 60,000 | 160,000 |
| Net income | $180,000 | $ 30,000 | $ 210,000 |

Total net income would decrease $10,000 ($220,000 − $210,000). This result is also obtained in the incremental analysis of the Champ racquets shown in **Illustration 23.18**.

**ILLUSTRATION 23.18** **Incremental analysis—eliminating unprofitable segment with no reduction in fixed costs**

Incremental Analysis - Eliminating an unprofitable segment

Home Insert Page Layout Formulas Data Review View

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| | A | B | C | D |
|---|---|---|---|---|
| 1 | | Continue | Eliminate | Net Income Increase (Decrease) |
| 2 | Sales | $100,000 | $ 0 | $(100,000) |
| 3 | Variable costs | 90,000 | 0 | 90,000 |
| 4 | Contribution margin | 10,000 | 0 | (10,000) |
| 5 | Fixed costs | 30,000 | 30,000 | 0 |
| 6 | Net income | $ (20,000) | $(30,000) | $ (10,000) |
| 7 | | | | |

The loss in net income is attributable to the Champ line's $10,000 contribution margin ($220,000 − $210,000) that will not be realized if the segment is discontinued.

Assume the same facts as above, except now assume that $22,000 of the fixed costs attributed to the Champ line can be eliminated if the line is discontinued. **Illustration 23.19** presents the incremental analysis based on this revised assumption.

**ILLUSTRATION 23.19** **Incremental analysis—eliminating unprofitable segment with reduction in fixed costs**

Incremental Analysis - Eliminating an unprofitable segment

Home Insert Page Layout Formulas Data Review View

P18 fx

| | A | B | C | D |
|---|---|---|---|---|
| 1 | | Continue | Eliminate | Net Income Increase (Decrease) |
| 2 | Sales | $100,000 | $ 0 | $(100,000) |
| 3 | Variable costs | 90,000 | 0 | 90,000 |
| 4 | Contribution margin | 10,000 | 0 | (10,000) |
| 5 | Fixed costs | 30,000 | 8,000 | 22,000 |
| 6 | Net income | $ (20,000) | $(8,000) | $ 12,000 |
| 7 | | | | |

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In this case, because the company is able to eliminate some of its fixed costs by eliminating the division, it can increase its net income by $12,000. **This occurs because the $22,000 savings that results from the eliminated fixed costs exceeds the $10,000 in lost contribution margin by $12,000 ($22,000 − $10,000).**

In deciding on the future status of an unprofitable segment, management should consider the effect of elimination on related product lines. It may be possible for continuing product lines to obtain some or all of the sales lost by the discontinued product line. In some businesses, services or products may be linked—for example, free checking accounts at a bank, or coffee at a donut shop. In addition, management should consider the effect of eliminating the product line on employees who may have to be discharged or retrained.

## Management Insight

Nerthuz / Getty Images

### Batteries Are Included!

Top managers at every major car manufacturer face a massive "make or buy" decision. For example, consider the production of electric cars. By far, the most expensive component in an electric car is the battery, which costs about $7,500. The battery is critical to vehicle performance since it determines both the power and range of the vehicle. **Mercedes** and **Volkswagen** plan to make their own batteries, but **General Motors**, **BMW**, and **Renault** have decided to buy their batteries from suppliers such as Panasonic and Samsung.

It is not an easy decision. Battery production requires huge investments in plant assets and research and development. **Nissan** learned the hard way that making your own batteries can be a risky venture. It made a big investment in battery production for its electric car, the Leaf, but then suffered huge losses when sales of the Leaf were far below projections. Alternatively, **Tesla**, which only makes electric cars, has fully committed to making its own batteries. In fact, it often describes itself as a battery company.

**Source:** Stephen Milmot, "Auto Companies: Better with Batteries Not Included," *Wall Street Journal* (December 19, 2016).

**What are the factors that companies must consider in deciding whether to make or to buy the batteries for their vehicles? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 6 | Unprofitable Segments

Lambert, Inc. manufactures several types of accessories. For the year, the knit hats and scarves line had sales of $400,000, variable expenses of $310,000, and fixed expenses of $120,000. Therefore, the knit hats and scarves line had a net loss of $30,000. If Lambert eliminates the knit hats and scarves line, $20,000 of fixed costs will remain. Prepare an analysis showing whether the company should eliminate the knit hats and scarves line.

**ACTION PLAN**

- Identify the revenues that change as a result of eliminating a product line.
- Identify all costs that change as a result of eliminating a product line, and net the amount against the revenues.

### Solution

| | Continue | Eliminate | Net Income Increase (Decrease) |
|---|---|---|---|
| Sales | $400,000 | $ 0 | $(400,000) |
| Variable costs | 310,000 | 0 | 310,000 |
| Contribution margin | 90,000 | 0 | (90,000) |
| Fixed costs | 120,000 | 20,000 | 100,000 |
| Net income | $ (30,000) | $(20,000) | $ 10,000 |

The analysis indicates that Lambert should eliminate the knit hats and scarves line because net income will increase $10,000.

Related exercise material: **BE23.8, DO IT! 23.6, E23.15, E23.16, and E23.17.**

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# Review and Practice

## Learning Objectives Review

### 1 Describe management's decision-making process and incremental analysis.

Management's decision-making process consists of (a) identifying the problem and assigning responsibility for the decision, (b) determining and evaluating possible courses of action, (c) making the decision, and (d) reviewing the results of the decision. Incremental analysis identifies financial data that change under alternative courses of action. These data are relevant to the decision because they vary across the possible alternatives.

### 2 Analyze the relevant costs in accepting an order at a special price.

The relevant costs are those that change if the order is accepted. The relevant information in accepting an order at a special price is the difference between the variable manufacturing costs to produce the special order and expected revenues. Any changes in fixed costs, opportunity cost, or other incremental costs or savings (such as additional shipping) should be considered.

### 3 Analyze the relevant costs in a make-or-buy decision.

In a make-or-buy decision, the relevant costs are (a) the variable manufacturing costs that will be saved as well as changes to fixed manufacturing costs, (b) the purchase price, and (c) opportunity cost.

### 4 Analyze the relevant costs and revenues in determining whether to sell or process materials further.

The decision rule for whether to sell or process materials further is: Process further as long as the incremental revenue from processing exceeds the incremental processing costs.

### 5 Analyze the relevant costs to be considered in repairing, retaining, or replacing equipment.

The relevant costs to be considered in determining whether equipment should be repaired, retained, or replaced are the effects on variable costs and the cost of the new equipment. Also, any disposal value of the existing asset must be considered.

### 6 Analyze the relevant costs in deciding whether to eliminate an unprofitable segment or product.

In deciding whether to eliminate an unprofitable segment or product, the relevant costs are the variable costs that drive the contribution margin, if any, produced by the segment or product. Opportunity cost and reduction of fixed expenses must also be considered.

## Glossary Review

**Incremental analysis** The process of identifying the financial data that change under alternative courses of action. (p. 23-3).

**Joint costs** For joint products, all costs incurred prior to the point at which the two products are separately identifiable (known as the **split-off point**). (p. 23-12).

**Joint products** Multiple end-products produced from a single raw material and a common production process. (p. 23-11).

**Opportunity cost** The potential benefit that is lost when one course of action is chosen rather than an alternative course of action. (p. 23-4).

**Relevant costs and revenues** Those costs and revenues that differ across alternatives. (p. 23-4).

**Sunk cost** A cost incurred in the past that cannot be changed or avoided by any present or future decision. (p. 23-4).

## Practice Multiple-Choice Questions

**1. (LO 1)** Three of the steps in management's decision-making process are (1) review results of decision, (2) determine and evaluate possible courses of action, and (3) make the decision. The steps are prepared in the following order:

**a.** (1), (2), (3).
**b.** (3), (2), (1).
**c.** (2), (1), (3).
**d.** (2), (3), (1).

**2. (LO 1)** Incremental analysis is the process of identifying the financial data that:

**a.** do not change under alternative courses of action.
**b.** change under alternative courses of action.
**c.** are mixed under alternative courses of action.
**d.** No correct answer is given.

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**3.** **(LO 1)** In making business decisions, management ordinarily considers:

**a.** quantitative factors but not qualitative factors.

**b.** financial information only.

**c.** both financial and nonfinancial information.

**d.** relevant costs, opportunity cost, and sunk costs.

**4.** **(LO 1)** A company is considering the following alternatives:

| | Alternative A | Alternative B |
|---|---|---|
| Revenues | $50,000 | $50,000 |
| Variable costs | 24,000 | 24,000 |
| Fixed costs | 12,000 | 15,000 |

Which of the following are relevant in choosing between these alternatives?

**a.** Revenues, variable costs, and fixed costs.

**b.** Variable costs and fixed costs.

**c.** Variable costs only.

**d.** Fixed costs only.

**5.** **(LO 2)** It costs a company $14 of variable costs and $6 of fixed costs to produce product Z200 that sells for $30. A foreign buyer offers to purchase 3,000 units at $18 each. If the special offer is accepted and produced with unused capacity, net income will:

**a.** decrease $6,000.

**b.** increase $6,000.

**c.** increase $12,000.

**d.** increase $9,000.

**6.** **(LO 2)** It costs a company $14 of variable costs and $6 of fixed costs to produce product Z200. Product Z200 sells for $30. A buyer offers to purchase 3,000 units at $18 each. The seller will incur special shipping costs of $5 per unit. If the special offer is accepted and produced with unused capacity, net income will:

**a.** increase $3,000.

**b.** increase $12,000.

**c.** decrease $12,000.

**d.** decrease $3,000.

**7.** **(LO 3)** Jobart Company is currently operating at full capacity. It is considering buying a part from an outside supplier rather than making it in-house. If Jobart purchases the part, it can use the released productive capacity to generate additional income of $30,000 from producing a different product. When conducting incremental analysis in this make-or-buy decision, the company should:

**a.** ignore the $30,000.

**b.** add $30,000 to other costs in the "Make" column.

**c.** add $30,000 to other costs in the "Buy" column.

**d.** subtract $30,000 from the other costs in the "Make" column.

**8.** **(LO 3)** In a make-or-buy decision, relevant costs are:

**a.** manufacturing costs that will be saved.

**b.** the purchase price of the units.

**c.** the opportunity cost.

**d.** All of the above.

**9.** **(LO 3)** Derek is performing incremental analysis in a make-or-buy decision for Item X. If Derek buys Item X, he can use its released productive capacity to produce Item Z. Derek will sell Item Z for $12,000 and incur production costs of $8,000. Derek's incremental analysis should include an opportunity cost of:

**a.** $12,000.

**b.** $8,000.

**c.** $4,000.

**d.** $0.

**10.** **(LO 4)** The decision rule in a sell-or-process-further decision is: process further as long as the incremental revenue from processing exceeds:

**a.** incremental processing costs.

**b.** variable processing costs.

**c.** fixed processing costs.

**d.** No correct answer is given.

**11.** **(LO 4)** Walton, Inc. makes an unassembled product that it currently sells for $55. Production costs are $20. Walton is considering assembling the product and selling it for $68. The cost to assemble the product is estimated at $12. What decision should Walton make?

**a.** Sell before assembly; net income per unit will be $12 greater.

**b.** Sell before assembly; net income per unit will be $1 greater.

**c.** Process further; net income per unit will be $13 greater.

**d.** Process further; net income per unit will be $1 greater.

**12.** **(LO 5)** In a decision to retain or replace equipment, the book value of the old equipment is a (an):

**a.** opportunity cost.

**b.** sunk cost.

**c.** incremental cost.

**d.** marginal cost.

**13.** **(LO 6)** If an unprofitable segment is eliminated:

**a.** net income will always increase.

**b.** variable costs of the eliminated segment will have to be absorbed by other segments.

**c.** fixed costs allocated to the eliminated segment will have to be absorbed by other segments.

**d.** net income will always decrease.

**14.** **(LO 6)** A segment of Hazard Inc. has the following data.

| | |
|---|---|
| Sales | $200,000 |
| Variable expenses | 140,000 |
| Fixed expenses | 100,000 |

If this segment is eliminated, what will be the effect on the remaining company? Assume that 50% of the fixed expenses will be eliminated and the rest will be allocated to the segments of the remaining company.

**a.** $120,000 increase.

**b.** $10,000 decrease.

**c.** $50,000 increase.

**d.** $10,000 increase.

## Solutions

**1.** **d.** The order of the steps in the decision process is (2) determine and evaluate possible courses of action, (3) make the decision, and (1) review the results of decision. Choices (a), (b), and (c) list the steps in the incorrect order.

**2.** **b.** Incremental analysis is the process of identifying the financial data that change under alternative courses of action, not the financial data that (a) do not change or (c) are mixed. Choice (d) is wrong as there is a correct answer given.

**3.** **c.** Management ordinarily considers both financial and nonfinancial information in making business decisions. The other choices are incorrect because they are all limited to financial data and do not consider nonfinancial information.

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**4. d.** Fixed costs is the only relevant factor, that is, the only factor that differs across Alternatives A and B. The other choices are incorrect because they list either revenues, variable costs, or both, which are the same amounts for both alternatives.

**5. c.** If the special offer is accepted and produced with unused capacity, variable cost per unit = $14, income per unit = ($18 − $14), so net income will increase by $12,000 (3,000 × $4), not (a) decrease $6,000, (b) increase $6,000, or (d) increase $9,000.

**6. d.** If the special offer is accepted and produced with unused capacity, variable cost per unit = $19 ($14 variable + $5 shipping costs), income per unit = −$1 ($18 − $19), so net income will decrease by $3,000 (3,000 × −$1), not (a) increase $3,000, (b) increase $12,000, or (c) decrease $12,000.

**7. b.** Jobart Company should add $30,000 to other costs in the "Make" column as it represents lost income of continuing to make the part in-house. The other choices are incorrect because the $30,000 (a) should not be ignored as it is an opportunity cost, (c) represents potential lost income if the company continues to make the part instead of buying it so therefore should not be placed in the "Buy" column, and (d) should be added to, not subtracted from, the other costs in the "Make" column.

**8. d.** All the costs in choices (a), (b), and (c) are relevant in a make-or-buy decision. So although choices (a), (b), and (c) are true statements, choice (d) is a better answer.

**9. c.** Derek's opportunity cost in its make-or-buy decision is $12,000 (revenue for Item Z) − $8,000 (production costs for Item Z) = $4,000, not (a) $12,000, (b) $8,000, or (d) $0.

**10. a.** The decision rule in a sell-or-process-further decision is to process further as long as the incremental revenue from such processing exceeds incremental processing costs, not (b) variable processing costs or (c) fixed processing costs. Choice (d) is wrong as there is a correct answer given.

**11. d.** If Walton processes further, net income per unit will increase $13 ($68 − $55), which is $1 more than its additional production costs ($12). The other choices are therefore incorrect.

**12. b.** In the decision to retain or replace equipment, the book value of the old equipment is a sunk cost (it reflects the original cost less accumulated depreciation, neither of which is relevant to the decision), not (a) an opportunity cost, (c) an incremental cost, or (d) a marginal cost.

**13. c.** Even though the segment is eliminated, the fixed costs allocated to that segment will still have to be covered. This is done by having other segments absorb the fixed costs of that segment. Choices (a) and (d) are incorrect because net income can either increase or decrease if a segment is eliminated. Choice (b) is incorrect because when a segment is eliminated, the variable costs of that segment will also be eliminated and will not need to be absorbed by other segments.

**14. b.** If the segment continues, net income = −$40,000 ($200,000 − $140,000 − $100,000). If the segment is eliminated, the contribution margin will also be eliminated but $50,000 ($100,000 × .50) of the fixed costs will remain. Therefore, the effect of eliminating the segment will be a $10,000 decrease not (a) a $120,000 increase, (c) a $50,000 increase, or (d) a $10,000 increase.

## Practice Brief Exercises

*Determine whether to make or buy a part.*

**1. (LO 3)** Flavia Industries incurs unit costs of $24 ($18 variable and $6 fixed) in making an assembly part for its finished product. A supplier offers to make 20,000 units of the assembly part at $17 per unit. If the offer is accepted, Flavia will save all variable costs but no fixed costs. Prepare an analysis showing the total cost saving, if any, Flavia will realize by buying the part.

### Solution

**1.**

| | Make | Buy | Net Income Increase (Decrease) |
|---|---|---|---|
| Variable manufacturing costs | $360,000 | $ –0– | $360,000 |
| Fixed manufacturing costs | 120,000 | 120,000 | –0– |
| Purchase price | –0– | 340,000 | (340,000) |
| Total annual cost | $480,000 | $460,000 | $ 20,000 |

The decision should be to buy the part.

*Determine whether to sell or process further.*

**2. (LO 4)** Fast Speed Bicycle Inc. makes parts for unfinished bicycles that it sells for $125. Production costs are $40 variable and $20 fixed. Because of unused capacity, Fast Speed is considering finishing the bicycles and selling them for $200. Additional variable finishing costs are expected to be $65 with no increase in fixed costs. Prepare an analysis on a per unit basis showing whether Fast Speed should sell unfinished or unfinished bicycles.

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**Solution**

**2.**

| | Sell | Process Further | Net Income Increase (Decrease) |
|---|---|---|---|
| Sales price per unit | $125 | $200 | $75 |
| Cost per unit | | | |
| Variable | 40 | 105 | (65) |
| Fixed | 20 | 20 | 0 |
| Total | 60 | 125 | (65) |
| Net income per unit | $ 65 | $ 75 | $10 |

The bicycles should be processed further because the incremental revenues exceed incremental costs by $10 per unit.

**3. (LO 6)** Hava Racquets Company manufactures pickleball racquets in four different models. For the year, the SoftNet line had a net loss of $40,000 from sales of $250,000, variable costs of $180,000 and fixed costs of $110,000. If the SoftNet line is eliminated, $30,000 of fixed costs will remain. Prepare an analysis showing whether the SoftNet Line should be eliminated.

*Determine whether to eliminate an unprofitable segment.*

**Solution**

**3.**

| | Continue | Eliminate | Net Income Increase (Decrease) |
|---|---|---|---|
| Sales | $250,000 | $ –0– | $(250,000) |
| Variable costs | 180,000 | –0– | 180,000 |
| Contribution margin | 70,000 | –0– | (70,000) |
| Fixed costs | 110,000 | 30,000 | 80,000 |
| Net income | $ (40,000) | $(30,000) | $ 10,000 |

The SoftNet product line should be eliminated because $80,000 of fixed cost is eliminated whereas only $70,000 of contribution margin is realized if the line is continued. The $70,000 related to the contribution margin is lower than the $80,000 savings related to fixed costs and therefore a savings of $10,000 results by eliminating SoftNet.

## Practice Exercises

**1. (LO 3)** Maningly Inc. has been manufacturing its own lampshades for its table lamps. The company is currently operating at 100% of capacity. Variable manufacturing overhead is charged to production at the rate of 50% of direct labor cost. The direct materials and direct labor cost per unit to make the lampshades are $4 and $6, respectively. Normal production is 50,000 table lamps per year.

A supplier offers to make the lampshades at a price of $13.50 per unit. If Maningly accepts the supplier's offer; all variable manufacturing costs will be eliminated, but the $50,000 of fixed manufacturing overhead currently being charged to the lampshades will have to be absorbed by other products.

*Use incremental analysis for make-or-buy decision.*

**Instructions**

**a.** Prepare the incremental analysis for the decision to make or buy the lampshades.

**b.** Should Maningly buy the lampshades?

**c.** Would your answer be different in (b) if the productive capacity released by not making the lampshades could be used to produce income of $40,000?

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### Solution

**1. a.**

| | Make | Buy | Net Income Increase (Decrease) |
|---|---|---|---|
| Direct materials (50,000 × $4.00) | $200,000 | $ 0 | $ 200,000 |
| Direct labor (50,000 × $6.00) | 300,000 | 0 | 300,000 |
| Variable manufacturing costs ($300,000 × 50%) | 150,000 | 0 | 150,000 |
| Fixed manufacturing costs | 50,000 | 50,000 | 0 |
| Purchase price (50,000 × $13.50) | 0 | 675,000 | (675,000) |
| Total annual cost | $700,000 | $725,000 | $ (25,000) |

**b.** No, Maningly should not purchase the lampshades. As indicated by the incremental analysis, it would cost the company $25,000 more to purchase the lampshades.

**c.** Yes, by purchasing the lampshades, a total cost saving of $15,000 will result as shown below.

| | Make | Buy | Net Income Increase (Decrease) |
|---|---|---|---|
| Total annual cost (from (a)) | $700,000 | $725,000 | $(25,000) |
| Opportunity cost | 40,000 | 0 | 40,000 |
| Total cost | $740,000 | $725,000 | $ 15,000 |

*Use incremental analysis for whether to sell or process materials further.*

**2. (LO 4)** A company manufactures three products using same production process. The costs incurred up to the split-off point are $200,000. These costs are allocated to the products on the basis of their sales value at the split-off point. The number of units produced, the selling prices per unit of the three products at the split-off point and after further processing, and the additional processing costs are as follows.

| Product | Number of Units Produced | Selling Price at Split-Off | Selling Price after Processing | Additional Processing Costs |
|---|---|---|---|---|
| D | 3,000 | $11.00 | $15.00 | $14,000 |
| E | 6,000 | 12.00 | 16.20 | 16,000 |
| F | 2,000 | 19.40 | 24.00 | 9,000 |

**Instructions**

**a.** Which information is relevant to the decision on whether or not to process the products further? Explain why this information is relevant.

**b.** Which product(s) should be processed further and which should be sold at the split-off point?

**c.** Would your decision be different if the company was using the quantity of output to allocate joint costs? Explain.

(CGA adapted)

### Solution

**2. a.** The costs that are relevant in this decision are the incremental revenues and the incremental costs associated with processing the material past the split-off point. Any costs incurred up to the split-off point are sunk costs and therefore irrelevant to this decision.

**b.** Revenue after further processing:

Product D: $45,000 (3,000 units × $15.00 per unit)
Product E: $97,200 (6,000 units × $16.20 per unit)
Product F: $48,000 (2,000 units × $24.00 per unit)

Revenue at split-off:

Product D: $33,000 (3,000 units × $11.00 per unit)
Product E: $72,000 (6,000 units × $12.00 per unit)
Product F: $38,800 (2,000 units × $19.40 per unit)

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| | D | E | F |
|---|---|---|---|
| Incremental revenue | $ 12,000[a] | $ 25,200[b] | $ 9,200[c] |
| Incremental cost | (14,000) | (16,000) | (9,000) |
| Increase (decrease) in profit | $ (2,000) | $ 9,200 | $ 200 |

[a]$45,000 – $33,000; [b]$97,200 – $72,000; [c]$48,000 – $38,800

Products E and F should be processed further, but Product D should not be processed further.

**c.** The decision would remain the same. It does not matter how the joint costs are allocated because joint costs are irrelevant to this decision.

**3. (LO 5)** Tek Enterprises uses a computer to process its sales invoices. Lately, business has been so good that it takes an extra 3 hours per night, plus every third Saturday, to keep up with the volume of sales invoices. Management is considering updating its computer with a faster model that would eliminate all of the overtime processing.

*Use incremental analysis for retaining or replacing equipment.*

| | Current Machine | New Machine |
|---|---|---|
| Original purchase cost | $15,000 | $25,000 |
| Accumulated depreciation | 6,000 | — |
| Estimated annual operating costs | 25,000 | 20,000 |
| Useful life | 6 years | 6 years |

If sold now, the current machine would have a salvage value of $5,000. If operated for the remainder of its useful life, the current machine would have zero salvage value. The new machine is expected to have zero salvage value after 6 years.

### Instructions

Should the current machine be replaced? (Ignore the time value of money.)

### Solution

**3.**

| | Retain Machine | Replace Machine | Net Income Increase (Decrease) |
|---|---|---|---|
| Operating costs | $150,000* | $120,000** | $30,000 |
| New machine cost | 0 | 25,000 | (25,000) |
| Salvage value (old) | 0 | (5,000) | 5,000 |
| Total | $150,000 | $140,000 | $10,000 |

*$25,000 × 6
**$20,000 × 6

The current machine should be replaced. The incremental analysis shows that net income for the 6-year period will be $10,000 higher by replacing the current machine.

**4. (LO 6)** Benai Lorenzo, a recent graduate of Bonita's accounting program, evaluated the operating performance of Wasson Company's six divisions. Benai made the following presentation to the Wasson board of directors and suggested the Ortiz Division be eliminated. "If the Ortiz Division is eliminated," she said, "our total profits would increase by $23,870."

*Use incremental analysis for elimination of division.*

| | The Other Five Divisions | Ortiz Division | Total |
|---|---|---|---|
| Sales | $1,664,200 | $ 96,200 | $1,760,400 |
| Cost of goods sold | 978,520 | 76,470 | 1,054,990 |
| Gross profit | 685,680 | 19,730 | 705,410 |
| Operating expenses | 527,940 | 43,600 | 571,540 |
| Net income | $ 157,740 | $(23,870) | $ 133,870 |

In the Ortiz Division, cost of goods sold is $70,000 variable and $6,470 fixed, and operating expenses are $15,000 variable and $28,600 fixed. None of the Ortiz Division's fixed costs will be eliminated if the division is discontinued.

### Instructions

Is Benai right about eliminating the Ortiz Division? Prepare an incremental analysis schedule to support your answer.

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**Solution**

**4.**

| | Continue | Eliminate | Net Income Increase (Decrease) |
|---|---|---|---|
| Sales | $ 96,200 | $ 0 | $(96,200) |
| Variable expenses | | | |
| Cost of goods sold | 70,000 | 0 | 70,000 |
| Operating expenses | 15,000 | 0 | 15,000 |
| Total variable | 85,000 | 0 | 85,000 |
| Contribution margin | 11,200 | 0 | (11,200) |
| Fixed expenses | | | |
| Cost of goods sold | 6,470 | 6,470 | 0 |
| Operating expenses | 28,600 | 28,600 | 0 |
| Total fixed | 35,070 | 35,070 | 0 |
| Net income (loss) | $(23,870) | $(35,070) | $(11,200) |

Benai is incorrect. The incremental analysis shows that net income will be $11,200 less if the Ortiz Division is eliminated. This amount equals the contribution margin that would be lost by discontinuing the division.

## Practice Problem

*Use incremental analysis for a special order.*

**(LO 2)** Walston Company produces kitchen cabinets for homebuilders across the western United States. The cost of producing 5,000 cabinets is as follows.

| | |
|---|---|
| Materials | $ 500,000 |
| Labor | 250,000 |
| Variable overhead | 100,000 |
| Fixed overhead | 400,000 |
| Total | $1,250,000 |

Walston also incurs selling expenses of $20 per cabinet. Wellington Corp. has offered Walston $165 per cabinet for a special order of 1,000 cabinets. The cabinets would be sold to homebuilders in the eastern United States and thus would not conflict with Walston's current sales. Selling expenses per cabinet would be only $5 per cabinet. Walston has available capacity to do the work.

**Instructions**

**a.** Prepare an incremental analysis for the special order.

**b.** Should Walston accept the special order? Why or why not?

**Solution**

**a.** Relevant costs per unit would be:

| | |
|---|---|
| Materials | $500,000/5,000 = $100 |
| Labor | 250,000/5,000 = 50 |
| Variable overhead | 100,000/5,000 = 20 |
| Selling expenses | 5 |
| Total relevant cost per unit | $175 |

| | Reject Order | Accept Order | Net Income Increase (Decrease) |
|---|---|---|---|
| Revenues | $0 | $165,000* | $ 165,000 |
| Costs | 0 | 175,000** | (175,000) |
| Net income | $0 | $ (10,000) | $ (10,000) |

*$165 × 1,000; **$175 × 1,000

**b.** Walston should reject the offer. The incremental benefit of $165 per cabinet is less than the incremental cost of $175. By accepting the order, Walston's net income would actually decline by $10,000.

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## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

## Questions

**1.** What steps are frequently involved in management's decision-making process?

**2.** Your roommate, Anna Polis, contends that accounting contributes to most of the steps in management's decision-making process. Is your roommate correct? Explain.

**3.** "Incremental analysis involves the accumulation of information concerning a single course of action." Do you agree? Why?

**4.** Sydney Greene asks for your help concerning the relevance of variable and fixed costs in incremental analysis. Help Sydney with her problem.

**5.** What data are relevant in deciding whether to accept an order at a special price?

**6.** Emil Corporation has an opportunity to buy parts at $9 each that currently cost $12 to make. What manufacturing costs are relevant to this make-or-buy decision?

**7.** Define the term "opportunity cost." How may this cost be relevant in a make-or-buy decision?

**8.** What is the decision rule in deciding whether to sell a product or process it further?

**9.** What are joint products? What accounting issue results from the production process that creates joint products?

**10.** How are allocated joint costs treated when making a sell-or-process-further decision?

**11.** Your roommate, Gale Dunham, is confused about sunk costs. Explain to your roommate the meaning of sunk costs and their relevance to a decision to retain or replace equipment.

**12.** Huang Inc. has one product line that is unprofitable. What circumstances may cause overall company net income to be lower if the unprofitable product line is eliminated?

## Brief Exercises

**BE23.1 (LO 1)** The steps in management's decision-making process are listed in random order below. Indicate the order in which the steps should be executed.

*Identify the steps in management's decision-making process.*

_____ Make a decision
_____ Identify the problem and assign responsibility
_____ Review results of the decision
_____ Determine and evaluate possible courses of action

**BE23.2 (LO 1)** Bogart Company is considering two alternatives. Alternative A will have revenues of $160,000 and costs of $100,000. Alternative B will have revenues of $180,000 and costs of $125,000. Compare Alternative A to Alternative B showing incremental revenues, costs, and net income.

*Determine incremental changes.*

**BE23.3 (LO 2)** At Bargain Electronics, it costs $30 per unit ($20 variable and $10 fixed) to make an MP3 player that normally sells for $45. A foreign wholesaler offers to buy 3,000 units at $25 each. Bargain Electronics will incur special shipping costs of $3 per unit. Assuming that Bargain Electronics has excess operating capacity, indicate the net income (loss) Bargain Electronics would realize by accepting the special order.

*Determine whether to accept a special order.*

**BE23.4 (LO 3)** Manson Industries incurs unit costs of $8 ($5 variable and $3 fixed) in making an assembly part for its finished product. A supplier offers to make 10,000 of the assembly part at $6 per unit. If the offer is accepted, Manson will save all variable costs but no fixed costs. Prepare an analysis showing the total cost saving, if any, Manson will realize by buying the part.

*Determine whether to make or buy a part.*

**BE23.5 (LO 4)** Pine Street Inc. makes unfinished bookcases that it sells for $62. Production costs are $36 variable and $10 fixed. Because it has unused capacity, Pine Street is considering finishing the bookcases and selling them for $70. Variable finishing costs are expected to be $6 per unit with no increase in fixed costs. Prepare an analysis on a per unit basis showing whether Pine Street should sell unfinished or finished bookcases.

*Determine whether to sell or process further.*

**BE23.6 (LO 4)** Each day, Adama Corporation processes 1 ton of a secret raw material into two resulting products, AB1 and XY1. When it processes 1 ton of the raw material, the company incurs joint

*Determine whether to sell or process further, joint products.*

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processing costs of $60,000. It allocates $25,000 of these costs to AB1 and $35,000 of these costs to XY1. The resulting AB1 can be sold for $100,000. Alternatively, it can be processed further to make AB2 at an additional processing cost of $45,000, and sold for $150,000. Each day's batch of XY1 can be sold for $95,000. Or, it can be processed further to create XY2, at an additional processing cost of $50,000, and sold for $130,000. Discuss what products Adama Corporation should make.

*Determine whether to retain or replace equipment.*

**BE23.7 (LO 5)** Bryant Company has a factory machine with a book value of $90,000 and a remaining useful life of 5 years. It can be sold for $30,000. A new machine is available at a cost of $400,000. This machine will have a 5-year useful life with no salvage value. The new machine will lower annual variable manufacturing costs from $600,000 to $500,000. Prepare an analysis showing whether the old machine should be retained or replaced.

*Determine whether to eliminate an unprofitable segment.*

**BE23.8 (LO 6)** Lisah, Inc., manufactures golf clubs in three models. For the year, the Big Bart line has a net loss of $10,000 from sales $200,000, variable costs $180,000, and fixed costs $30,000. If the Big Bart line is eliminated, $20,000 of fixed costs will remain. Prepare an analysis showing whether the Big Bart line should be eliminated.

## DO IT! Exercises

*Determine incremental costs.*

**DO IT! 23.1 (LO 1)** Nathan T Corporation is comparing two different options. Nathan T currently uses Option 1, with revenues of $65,000 per year, maintenance expenses of $5,000 per year, and operating expenses of $26,000 per year. Option 2 provides revenues of $60,000 per year, maintenance expenses of $5,000 per year, and operating expenses of $22,000 per year. Option 1 employs a piece of equipment which was upgraded 2 years ago at a cost of $17,000. If Option 2 is chosen, it will free up resources that will bring in an additional $4,000 of revenue. Complete the following table to show the change in income from choosing Option 2 versus Option 1. Designate Sunk costs with an "S."

| | Option 1 | Option 2 | Net Income Increase (Decrease) | Sunk (S) |
|---|---|---|---|---|
| Revenues | | | | |
| Maintenance expenses | | | | |
| Operating expenses | | | | |
| Equipment upgrade | | | | |
| Opportunity cost | | | | |

*Evaluate special order.*

**DO IT! 23.2 (LO 2)** Maize Company incurs a cost of $35 per unit, of which $20 is variable, to make a product that normally sells for $58. A foreign wholesaler offers to buy 6,000 units at $30 each. Maize will incur additional costs of $4 per unit to imprint a logo and to pay for shipping. Compute the increase or decrease in net income Maize will realize by accepting the special order, assuming Maize has sufficient excess operating capacity. Should Maize Company accept the special order?

*Evaluate make-or-buy opportunity.*

**DO IT! 23.3 (LO 3)** Wilma Company must decide whether to make or buy some of its components. The costs of producing 60,000 switches for its generators are as follows.

| | | | |
|---|---|---|---|
| Direct materials | $30,000 | Variable overhead | $45,000 |
| Direct labor | $42,000 | Fixed overhead | $60,000 |

Instead of making the switches at an average cost of $2.95 ($177,000 ÷ 60,000), the company has an opportunity to buy the switches at $2.70 per unit. If the company purchases the switches, all the variable costs and one-fourth of the fixed costs will be eliminated. (a) Prepare an incremental analysis showing whether the company should make or buy the switches. (b) Would your answer be different if the released productive capacity will generate additional income of $34,000?

*Sell or process further.*

**DO IT! 23.4 (LO 4)** Mesa Verde manufactures unpainted furniture for the do-it-yourself (DIY) market. It currently sells a table for $75. Production costs per unit are $40 variable and $10 fixed. Mesa Verde is considering staining and sealing the table to sell it for $100. Variable costs per unit to finish each table are expected to be an additional $19 per unit, and fixed costs are expected to be an additional $3 per unit. Prepare an analysis showing whether Mesa Verde should sell unpainted or finished tables.

*Repair or replace equipment.*

**DO IT! 23.5 (LO 5)** Darcy Roofing is faced with a decision. The company relies very heavily on the use of its 60-foot extension lift for work on large homes and commercial properties. Last year, Darcy

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Roofing spent $60,000 refurbishing the lift. It has just determined that another $40,000 of repair work is required. Alternatively, it has found a newer used lift that is for sale for $170,000. The company estimates that both lifts would have useful lives of 6 years. The new lift is more efficient and thus would reduce operating expenses by about $20,000 per year. Darcy Roofing could also rent out the new lift for about $10,000 per year. The old lift is not suitable for rental. The old lift could currently be sold for $25,000 if the new lift is purchased. Prepare an incremental analysis showing whether the company should repair or replace the equipment.

**DO IT! 23.6 (LO 6)** Gator Corporation manufactures several types of accessories. For the year, the gloves and mittens line had sales of $500,000, variable expenses of $370,000, and fixed expenses of $150,000. Therefore, the gloves and mittens line had a net loss of $20,000. If Gator eliminates the line, $38,000 of fixed costs will remain. Prepare an analysis showing whether the company should eliminate the gloves and mittens line.

*Analyze whether to eliminate unprofitable segment.*

## Exercises

**E23.1 (LO 1)** As a study aid, your classmate Pascal Adams has prepared the following list of statements about decision-making and incremental analysis.

*Analyze statements about decision-making and incremental analysis.*

1. The first step in management's decision-making process is, "Determine and evaluate possible courses of action."
2. The final step in management's decision-making process is to actually make the decision.
3. Accounting's contribution to management's decision-making process occurs primarily in evaluating possible courses of action and in reviewing the results.
4. In making business decisions, management ordinarily considers only financial information because it is objectively determined.
5. Decisions involve a choice among alternative courses of action.
6. The process used to identify the financial data that change under alternative courses of action is called incremental analysis.
7. Costs that are the same under all alternative courses of action sometimes affect the decision.
8. When using incremental analysis, some costs will always change under alternative courses of action, but revenues will not.
9. Variable costs will change under alternative courses of action, but fixed costs will not.

### Instructions

Identify each statement as true or false. If false, indicate how to correct the statement.

**E23.2 (LO 2)** Gruden Company produces golf discs which it normally sells to retailers for $7 each. The cost of manufacturing 20,000 golf discs is:

*Use incremental analysis for special-order decision.*

| | |
|---|---|
| Materials | $ 10,000 |
| Labor | 30,000 |
| Variable overhead | 20,000 |
| Fixed overhead | 40,000 |
| Total | $100,000 |

Gruden also incurs 5% sales commission ($0.35) on each disc sold.

McGee Corporation offers Gruden $4.80 per disc for 5,000 discs. McGee would sell the discs under its own brand name in foreign markets not yet served by Gruden. If Gruden accepts the offer, its fixed overhead will increase from $40,000 to $46,000 due to the purchase of a new imprinting machine. No sales commission will result from the special order.

### Instructions

**a.** Prepare an incremental analysis for the special order.

**b.** Should Gruden accept the special order? Why or why not?

**c.** What assumptions underlie the decision made in part (b)?

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*Use incremental analysis for special order.*

**E23.3 (LO 2)** Moonbeam Company manufactures toasters. For the first 8 months of 2020, the company reported the following operating results while operating at 75% of plant capacity:

| | |
|---|---|
| Sales (350,000 units) | $4,375,000 |
| Cost of goods sold | 2,600,000 |
| Gross profit | 1,775,000 |
| Operating expenses | 840,000 |
| Net income | $ 935,000 |

Cost of goods sold was 70% variable and 30% fixed; operating expenses were 80% variable and 20% fixed.

In September, Moonbeam receives a special order for 15,000 toasters at $7.60 each from Luna Company of Ciudad Juarez. Acceptance of the order would result in an additional $3,000 of shipping costs but no increase in fixed costs.

### Instructions

**a.** Prepare an incremental analysis for the special order.

**b.** Should Moonbeam accept the special order? Why or why not?

*Use incremental analysis for special order.*

**E23.4 (LO 2)** Klean Fiber Company is the creator of Y-Go, a technology that weaves silver into its fabrics to kill bacteria and odor on clothing while managing heat. Y-Go has become very popular in undergarments for sports activities. Operating at capacity, the company can produce 1,000,000 Y-Go undergarments a year. The per unit and the total costs for an individual garment when the company operates at full capacity are as follows.

| | Per Undergarment | Total |
|---|---|---|
| Direct materials | $2.00 | $2,000,000 |
| Direct labor | 0.75 | 750,000 |
| Variable manufacturing overhead | 1.00 | 1,000,000 |
| Fixed manufacturing overhead | 1.50 | 1,500,000 |
| Variable selling expenses | 0.25 | 250,000 |
| Totals | $5.50 | $5,500,000 |

The U.S. Army has approached Klean Fiber and expressed an interest in purchasing 250,000 Y-Go undergarments for soldiers in extremely warm climates. The Army would pay the unit cost for direct materials, direct labor, and variable manufacturing overhead costs. In addition, the Army has agreed to pay an additional $1 per undergarment to cover all other costs and provide a profit. Presently, Klean Fiber is operating at 70% capacity and does not have any other potential buyers for Y-Go. If Klean Fiber accepts the Army's offer, it will not incur any variable selling expenses related to this order.

### Instructions

Using incremental analysis, determine whether Klean Fiber should accept the Army's offer.

*Use incremental analysis for make-or-buy decision.*

**E23.5 (LO 3)** Pottery Ranch Inc. has been manufacturing its own finials for its curtain rods. The company is currently operating at 100% of capacity, and variable manufacturing overhead is charged to production at the rate of 70% of direct labor cost. The direct materials and direct labor cost per unit to make a pair of finials are $4 and $5, respectively. Normal production is 30,000 curtain rods per year.

A supplier offers to make a pair of finials at a price of $12.95 per unit. If Pottery Ranch accepts the supplier's offer, all variable manufacturing costs will be eliminated, but the $45,000 of fixed manufacturing overhead currently being charged to the finials will have to be absorbed by other products.

### Instructions

**a.** Prepare the incremental analysis for the decision to make or buy the finials.

**b.** Should Pottery Ranch buy the finials?

**c.** Would your answer be different in (b) if the productive capacity released by not making the finials could be used to produce income of $20,000?

*Use incremental analysis for make-or-buy decision.*

**E23.6 (LO 3)** Jobs, Inc. has recently started the manufacture of Tri-Robo, a three-wheeled robot that can scan a home for fires and gas leaks and then transmit this information to a smartphone. The cost structure to manufacture 20,000 Tri-Robos is as follows.

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| | Cost |
|---|---|
| Direct materials ($50 per robot) | $1,000,000 |
| Direct labor ($40 per robot) | 800,000 |
| Variable overhead ($6 per robot) | 120,000 |
| Allocated fixed overhead ($30 per robot) | 600,000 |
| Total | $2,520,000 |

Jobs is approached by Tienh Inc., which offers to make Tri-Robo for $115 per unit or $2,300,000.

### Instructions

**a.** Using incremental analysis, determine whether Jobs should accept this offer under each of the following independent assumptions.

**1.** Assume that $405,000 of the fixed overhead cost can be avoided.

**2.** Assume that none of the fixed overhead can be avoided. However, if the robots are purchased from Tienh Inc., Jobs can use the released productive resources to generate additional income of $375,000.

**b.** Describe the qualitative factors that might affect the decision to purchase the robots from an outside supplier.

*Prepare incremental analysis for make-or-buy decision.*

**E23.7 (LO 3)** Riggs Company purchases sails and produces sailboats. It currently produces 1,200 sailboats per year, operating at normal capacity, which is about 80% of full capacity. Riggs purchases sails at $250 each, but the company is considering using the excess capacity to manufacture the sails instead. The manufacturing cost per sail would be $100 for direct materials, $80 for direct labor, and $90 for overhead. The $90 overhead is based on $78,000 of annual fixed overhead that is allocated using normal capacity.

The president of Riggs has come to you for advice. "It would cost me $270 to make the sails," she says, "but only $250 to buy them. Should I continue buying them, or have I missed something?"

### Instructions

**a.** Prepare a per unit analysis of the differential costs. Briefly explain whether Riggs should make or buy the sails.

**b.** If Riggs suddenly finds an opportunity to rent out the unused capacity of its factory for $77,000 per year, would your answer to part (a) change? Briefly explain.

**c.** Identify three qualitative factors that should be considered by Riggs in this make-or-buy decision.

(CGA adapted)

*Prepare incremental analysis concerning make-or-buy decision.*

**E23.8 (LO 3)** Innova uses 1,000 units of the component IMC2 every month to manufacture one of its products. The unit costs incurred to manufacture the component are as follows.

| | |
|---|---|
| Direct materials | $ 65.00 |
| Direct labor | 45.00 |
| Overhead | 126.50 |
| Total | $236.50 |

Overhead costs include variable material handling costs of $6.50, which are applied to products on the basis of direct material costs. The remainder of the overhead costs are applied on the basis of direct labor dollars and consist of 60% variable costs and 40% fixed costs.

A vendor has offered to supply the IMC2 component at a price of $200 per unit.

### Instructions

**a.** Should Innova purchase the component from the outside vendor if Innova's capacity remains idle?

**b.** Should Innova purchase the component from the outside vendor if it can use its facilities to manufacture another product? What information will Innova need to make an accurate decision? Show your calculations.

**c.** What are the qualitative factors that Innova will have to consider when making this decision?

(CGA adapted)

*Use incremental analysis for further processing of materials decision.*

**E23.9 (LO 4)** Anna Garden recently opened her own basketweaving studio. She sells finished baskets in addition to selling the raw materials needed by customers to weave baskets of their own. Unfortunately, owing to space limitations, Anna is unable to carry all varieties of kits originally assembled and must choose between two basic packages.

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The Basic Kit includes undyed, uncut reeds (with dye included) for weaving one basket. This basic package costs Anna $16 and sells for $30. The second kit, called Stage 2, includes cut reeds that have already been dyed. With this kit the customer need only soak the reeds and weave the basket. Anna produces the Stage 2 kit by using the materials included in the Basic Kit. Because she is more efficient at cutting and dying reeds than her average customer, Anna is able to produce two Stage 2 kits in one hour from one Basic Kit. (She values her time at $18 per hour.) The Stage 2 kit sells for $36.

**Instructions**

Determine whether Anna's basketweaving studio should carry the Basic Kit with undyed and uncut reeds or the Stage 2 kit with reeds already dyed and cut. Prepare an incremental analysis to support your answer.

*Determine whether to sell or process further, joint products.*

Excel

**E23.10 (LO 4)** Stahl Inc. produces three separate products from a common process costing $100,000. Each of the products can be sold at the split-off point or can be processed further and then sold for a higher price. Shown below are cost and selling price data for a recent period.

| | Sales Value at Split-Off Point | Cost to Process Further | Sales Value after Further Processing |
|---|---|---|---|
| Product 10 | $60,000 | $100,000 | $190,000 |
| Product 12 | 15,000 | 30,000 | 35,000 |
| Product 14 | 55,000 | 150,000 | 215,000 |

**Instructions**

**a.** Determine total net income if all products are sold at the split-off point.

**b.** Determine total net income if all products are sold after further processing.

**c.** Using incremental analysis, determine which products should be sold at the split-off point and which should be processed further.

**d.** Determine total net income using the results from (c) and explain why the net income is different from that determined in (b).

*Determine whether to sell or process further, joint products.*

Excel

**E23.11 (LO 4)** Kirk Minerals processes materials extracted from mines. The most common raw material that it processes results in three joint products: Spock, Uhura, and Sulu. Each of these products can be sold as is, or each can be processed further and sold for a higher price. The company incurs joint costs of $180,000 to process one batch of the raw material that produces the three joint products. The following cost and sales information is available for one batch of each product.

| | Sales Value at Split-Off Point | Allocated Joint Costs | Cost to Process Further | Sales Value of Processed Product |
|---|---|---|---|---|
| Spock | $210,000 | $40,000 | $110,000 | $300,000 |
| Uhura | 300,000 | 60,000 | 85,000 | 400,000 |
| Sulu | 455,000 | 80,000 | 250,000 | 800,000 |

**Instructions**

Determine whether each of the three joint products should be sold as is, or processed further.

*Prepare incremental analysis for whether to sell or process materials further.*

**E23.12 (LO 4)** A company manufactures three products using the same production process. The costs incurred up to the split-off point are $200,000. These costs are allocated to the products on the basis of their sales value at the split-off point. The number of units produced, the selling prices per unit of the three products at the split-off point and after further processing, and the additional processing costs are as follows.

| Product | Number of Units Produced | Selling Price at Split-Off | Selling Price after Processing | Additional Processing Costs |
|---|---|---|---|---|
| D | 4,000 | $10.00 | $15.00 | $14,000 |
| E | 6,000 | 11.60 | 16.20 | 20,000 |
| F | 2,000 | 19.40 | 22.60 | 9,000 |

**Instructions**

**a.** Which information is relevant to the decision on whether or not to process the products further? Explain why this information is relevant.

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**b.** Which product(s) should be processed further and which should be sold at the split-off point?

**c.** Would your decision be different if the company was using the quantity of output to allocate joint costs? Explain.

(CGA adapted)

*Use incremental analysis for retaining or replacing equipment decision.*

**E23.13 (LO 5)** **Service** On January 2, 2019, Twilight Hospital purchased a $100,000 special radiology scanner from Bella Inc. The scanner had a useful life of 4 years and was estimated to have no disposal value at the end of its useful life. The straight-line method of depreciation is used on this scanner. Annual operating costs with this scanner are $105,000.

Approximately one year later, the hospital is approached by Dyno Technology salesperson, Jacob Cullen, who indicated that purchasing the scanner in 2019 from Bella Inc. was a mistake. He points out that Dyno has a scanner that will save Twilight Hospital $25,000 a year in operating expenses over its 3-year useful life. Jacob notes that the new scanner will cost $110,000 and has the same capabilities as the scanner purchased last year. The hospital agrees that both scanners are of equal quality. The new scanner will have no disposal value. Jacob agrees to buy the old scanner from Twilight Hospital for $50,000.

### Instructions

**a.** If Twilight Hospital sells its old scanner on January 2, 2020, compute the gain or loss on the sale.

**b.** Using incremental analysis, determine if Twilight Hospital should purchase the new scanner on January 2, 2020.

**c.** Explain why Twilight Hospital might be reluctant to purchase the new scanner, regardless of the results indicated by the incremental analysis in (b).

*Use incremental analysis for retaining or replacing equipment decision.*

**E23.14 (LO 5)** Johnson Enterprises uses a computer to handle its sales invoices. Lately, business has been so good that it takes an extra 3 hours per night, plus every third Saturday, to keep up with the volume of sales invoices. Management is considering updating its computer with a faster model that would eliminate all of the overtime processing.

| | Current Machine | New Machine |
|---|---|---|
| Original purchase cost | $15,000 | $25,000 |
| Accumulated depreciation | $ 6,000 | — |
| Estimated annual operating costs | $25,000 | $20,000 |
| Remaining useful life | 5 years | 5 years |

If sold now, the current machine would have a salvage value of $6,000. If operated for the remainder of its useful life, the current machine would have zero salvage value. The new machine is expected to have zero salvage value after 5 years.

### Instructions

Prepare an incremental analysis to determine whether the current machine should be replaced.

*Use incremental analysis concerning elimination of division.*

**E23.15 (LO 6)** Veronica Mars, a recent graduate of Bell's accounting program, evaluated the operating performance of Dunn Company's six divisions. Veronica made the following presentation to Dunn's board of directors and suggested the Percy Division be eliminated. "If the Percy Division is eliminated," she said, "our total profits would increase by $26,000."

| | The Other Five Divisions | Percy Division | Total |
|---|---|---|---|
| Sales | $1,664,200 | $100,000 | $1,764,200 |
| Cost of goods sold | 978,520 | 76,000 | 1,054,520 |
| Gross profit | 685,680 | 24,000 | 709,680 |
| Operating expenses | 527,940 | 50,000 | 577,940 |
| Net income | $ 157,740 | $ (26,000) | $ 131,740 |

In the Percy Division, cost of goods sold is $61,000 variable and $15,000 fixed, and operating expenses are $30,000 variable and $20,000 fixed. None of the Percy Division's fixed costs will be eliminated if the division is discontinued.

### Instructions

Is Veronica right about eliminating the Percy Division? Prepare a schedule to support your answer.

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*Use incremental analysis for elimination of a product line.*

**E23.16 (LO 6)** Cawley Company makes three models of tasers. Information on the three products is given below.

| | Tingler | Shocker | Stunner |
|---|---|---|---|
| Sales | $300,000 | $500,000 | $200,000 |
| Variable expenses | 150,000 | 200,000 | 145,000 |
| Contribution margin | 150,000 | 300,000 | 55,000 |
| Fixed expenses | 120,000 | 230,000 | 95,000 |
| Net income | $ 30,000 | $ 70,000 | $ (40,000) |

Fixed expenses consist of $300,000 of common costs allocated to the three products based on relative sales, as well as direct fixed expenses unique to each model of $30,000 (Tingler), $80,000 (Shocker), and $35,000 (Stunner). The common costs will be incurred regardless of how many models are produced. The direct fixed expenses would be eliminated if that model is phased out.

James Watt, an executive with the company, feels the Stunner line should be discontinued to increase the company's net income.

### Instructions

**a.** Compute current net income for Cawley Company.

**b.** Compute net income by product line and in total for Cawley Company if the company discontinues the Stunner product line. (*Hint:* Allocate the $300,000 common costs to the two remaining product lines based on their relative sales.)

**c.** Should Cawley eliminate the Stunner product line? Why or why not?

*Prepare incremental analysis concerning keeping or dropping a product to maximize operating income.*

**E23.17 (LO 6)** Tharp Company operates a small factory in which it manufactures two products: C and D. Production and sales results for last year were as follows.

| | C | D |
|---|---|---|
| Units sold | 9,000 | 20,000 |
| Selling price per unit | $95 | $75 |
| Variable cost per unit | 50 | 40 |
| Fixed cost per unit | 24 | 24 |

For purposes of simplicity, the firm averages total fixed costs over the total number of units of C and D produced and sold.

The research department has developed a new product (E) as a replacement for product D. Market studies show that Tharp Company could sell 10,000 units of E next year at a price of $115; the variable cost per unit of E is $45. The introduction of product E will lead to a 10% increase in demand for product C and discontinuation of product D. If the company does not introduce the new product, it expects next year's results to be the same as last year's.

### Instructions

Should Tharp Company introduce product E next year? Explain why or why not. Show calculations to support your decision.

(CMA-Canada adapted)

*Identify relevant costs for different decisions.*

**E23.18 (LO 1, 2, 3, 4, 5, 6)** The costs listed below relate to a variety of different decision situations.

| Cost | Decision |
|---|---|
| 1. Unavoidable fixed overhead | Eliminate an unprofitable segment |
| 2. Direct labor | Make or buy |
| 3. Original cost of old equipment | Equipment replacement |
| 4. Joint production costs | Sell or process further |
| 5. Opportunity cost | Accepting a special order |
| 6. Segment manager's salary | Eliminate an unprofitable segment (manager will be terminated) |
| 7. Cost of new equipment | Equipment replacement |
| 8. Incremental production costs | Sell or process further |
| 9. Direct materials | Equipment replacement (the amount of materials required does not change) |
| 10. Rent expense | Purchase or lease a building |

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### Instructions

For each cost listed above, indicate if it is relevant or not to the related decision. For those costs determined to be irrelevant, briefly explain why.

## Problems: Set A

**P23.1A (LO 2) Writing** ThreePoint Sports Inc. manufactures basketballs for the Women's National Basketball Association (WNBA). For the first 6 months of 2020, the company reported the following operating results while operating at 80% of plant capacity and producing 120,000 units.

*Use incremental analysis for special order and identify nonfinancial factors in the decision.*

| | Amount |
|---|---|
| Sales | $4,800,000 |
| Cost of goods sold | 3,600,000 |
| Selling and administrative expenses | 405,000 |
| Net income | $ 795,000 |

Fixed costs for the period were cost of goods sold $960,000, and selling and administrative expenses $225,000.

In July, normally a slack manufacturing month, ThreePoint Sports receives a special order for 10,000 basketballs at $28 each from the Greek Basketball Association (GBA). Acceptance of the order would increase variable selling and administrative expenses $0.75 per unit because of shipping costs but would not increase fixed costs and expenses.

### Instructions

**a.** Prepare an incremental analysis for the special order.

a. NI increase $37,500

**b.** Should ThreePoint Sports Inc. accept the special order? Explain your answer.

**c.** What is the minimum selling price on the special order to produce net income of $5.00 per ball?

**d.** What nonfinancial factors should management consider in making its decision?

**P23.2A (LO 3) Writing** The management of Shatner Manufacturing Company is trying to decide whether to continue manufacturing a part or to buy it from an outside supplier. The part, called CISCO, is a component of the company's finished product.

*Use incremental analysis related to make or buy, consider opportunity cost, and identify nonfinancial factors.*

The following information was collected from the accounting records and production data for the year ending December 31, 2020.

1. 8,000 units of CISCO were produced in the Machining Department.
2. Variable manufacturing costs applicable to the production of each CISCO unit were: direct materials $4.80, direct labor $4.30, indirect labor $0.43, utilities $0.40.
3. Fixed manufacturing costs applicable to the production of CISCO were:

| Cost Item | Direct | Allocated |
|---|---|---|
| Depreciation | $2,100 | $ 900 |
| Property taxes | 500 | 200 |
| Insurance | 900 | 600 |
| | $3,500 | $1,700 |

All variable manufacturing and direct fixed costs will be eliminated if CISCO is purchased. Allocated costs will not be eliminated if CISCO is purchased. So if CISCO is purchased, the fixed manufacturing costs allocated to CISCO will have to be absorbed by other production departments.

4. The lowest quotation for 8,000 CISCO units from a supplier is $80,000.
5. If CISCO units are purchased, freight and inspection costs would be $0.35 per unit, and receiving costs totaling $1,300 per year would be incurred by the Machining Department.

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**Instructions**

a. NI (decrease) $(1,160)

**a.** Prepare an incremental analysis for CISCO. Your analysis should have columns for (1) Make CISCO, (2) Buy CISCO, and (3) Net Income Increase/(Decrease).

**b.** Based on your analysis, what decision should management make?

c. NI increase $1,840

**c.** Would the decision be different if Shatner Company has the opportunity to produce $3,000 of net income with the facilities currently being used to manufacture CISCO? Show computations.

**d.** What nonfinancial factors should management consider in making its decision?

*Determine if product should be sold or processed further.*

Excel

**P23.3A (LO 4)** Thompson Industrial Products Inc. (TIPI) is a diversified industrial-cleaner processing company. The company's Dargan plant produces two products: a table cleaner and a floor cleaner from a common set of chemical inputs (CDG). Each week, 900,000 ounces of chemical input are processed at a cost of $210,000 into 600,000 ounces of floor cleaner and 300,000 ounces of table cleaner. The floor cleaner has no market value until it is converted into a polish with the trade name FloorShine. The additional processing costs for this conversion amount to $240,000.

FloorShine sells at $20 per 30-ounce bottle. The table cleaner can be sold for $17 per 25-ounce bottle. However, the table cleaner can be converted into two other products by adding 300,000 ounces of another compound (TCP) to the 300,000 ounces of table cleaner. This joint process will yield 300,000 ounces each of table stain remover (TSR) and table polish (TP). The additional processing costs for this process amount to $100,000. Both table products can be sold for $14 per 25-ounce bottle.

The company decided not to process the table cleaner into TSR and TP based on the following analysis.

| | | Process Further | | |
|---|---|---|---|---|
| | Table Cleaner | Table Stain Remover (TSR) | Table Polish (TP) | Total |
| Production in ounces | 300,000 | 300,000 | 300,000 | |
| Revenues | $204,000 | $168,000 | $168,000 | $336,000 |
| Costs: | | | | |
| CDG costs | 70,000* | 52,500 | 52,500 | 105,000** |
| TCP costs | 0 | 50,000 | 50,000 | 100,000 |
| Total costs | 70,000 | 102,500 | 102,500 | 205,000 |
| Weekly gross profit | $134,000 | $ 65,500 | $ 65,500 | $131,000 |

*If table cleaner is not processed further, it is allocated 1/3 of the $210,000 of CDG cost, which is equal to 1/3 of the total physical output.
**If table cleaner is processed further, total physical output is 1,200,000 ounces. TSR and TP combined account for 50% of the total physical output and are each allocated 25% of the CDG cost.

**Instructions**

**a.** Determine if management made the correct decision to not process the table cleaner further by doing the following.

**1.** Calculate the company's total weekly gross profit assuming the table cleaner is not processed further.

2. Gross profit $186,000

**2.** Calculate the company's total weekly gross profit assuming the table cleaner is processed further.

**3.** Compare the resulting net incomes and comment on management's decision.

**b.** Using incremental analysis, determine if the table cleaner should be processed further.

(CMA adapted)

*Compute gain or loss, and determine if equipment should be replaced.*

**P23.4A (LO 5)** Service Writing At the beginning of last year (2019), Richter Condos installed a mechanized elevator for its tenants. The owner of the company, Ron Richter, recently returned from an industry equipment exhibition where he watched a computerized elevator demonstrated. He was impressed with the elevator's speed, comfort of ride, and cost efficiency. Upon returning from the exhibition, he asked his purchasing agent to collect price and operating cost data on the new elevator. In addition, he asked

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the company's accountant to provide him with cost data on the company's elevator. This information is presented below.

| | Old Elevator | New Elevator |
|---|---|---|
| Purchase price | $120,000 | $160,000 |
| Estimated salvage value | 0 | 0 |
| Estimated useful life | 5 years | 4 years |
| Depreciation method | Straight-line | Straight-line |
| Annual operating costs other than depreciation: | | |
| Variable | $ 35,000 | $ 10,000 |
| Fixed | 23,000 | 8,500 |

Annual revenues are $240,000, and selling and administrative expenses are $29,000, regardless of which elevator is used. If the old elevator is replaced now, at the beginning of 2020, Richter Condos will be able to sell it for $25,000.

### Instructions

**a.** Determine any gain or loss if the old elevator is replaced.

**b.** Prepare a 4-year summarized income statement for each of the following assumptions:

**1.** The old elevator is retained.

**2.** The old elevator is replaced.

b. 2. NI $539,000

**c.** Using incremental analysis, determine if the old elevator should be replaced.

c. NI increase $23,000

**d.** Write a memo to Ron Richter explaining why any gain or loss should be ignored in the decision to replace the old elevator.

**P23.5A (LO 6)** Brislin Company has four operating divisions. During the first quarter of 2020, the company reported aggregate income from operations of $213,000 and the following divisional results.

*Prepare incremental analysis concerning elimination of divisions.*

Excel

| | Division | | | |
|---|---|---|---|---|
| | I | II | III | IV |
| Sales | $250,000 | $200,000 | $500,000 | $450,000 |
| Cost of goods sold | 200,000 | 192,000 | 300,000 | 250,000 |
| Selling and administrative expenses | 75,000 | 60,000 | 60,000 | 50,000 |
| Income (loss) from operations | $ (25,000) | $ (52,000) | $140,000 | $150,000 |

Analysis reveals the following percentages of variable costs in each division.

| | I | II | III | IV |
|---|---|---|---|---|
| Cost of goods sold | 70% | 90% | 80% | 75% |
| Selling and administrative expenses | 40 | 60 | 50 | 60 |

Discontinuance of any division would save 50% of the fixed costs and expenses for that division.

Top management is very concerned about the unprofitable divisions (I and II). Consensus is that one or both of the divisions should be discontinued.

### Instructions

**a.** Compute the contribution margin for Divisions I and II.

a. Contribution margin I $80,000

**b.** Prepare an incremental analysis concerning the possible discontinuance of (1) Division I and (2) Division II. What course of action do you recommend for each division?

**c.** Prepare a columnar condensed income statement for Brislin Company, assuming Division II is eliminated. (Use the CVP format.) Division II's unavoidable fixed costs are allocated equally to the continuing divisions.

c. Income III $132,800

**d.** Reconcile the total income from operations ($213,000) with the total income from operations without Division II.

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## Continuing Cases

### Current Designs

**CD23 Current Designs** faces a number of important decisions that require incremental analysis. Consider each of the following situations independently.

**Situation 1**

Recently, Mike Cichanowski, owner and CEO of Current Designs, received a phone call from the president of a brewing company. He was calling to inquire about the possibility of Current Designs producing "floating coolers" for a promotion his company was planning. These coolers resemble a kayak but are about one-third the size. They are used to float food and beverages while paddling down the river on a weekend leisure trip. The company would be interested in purchasing 100 coolers for the upcoming summer. It is willing to pay $250 per cooler. The brewing company would pick up the coolers upon completion of the order.

Mike met with Diane Buswell, controller, to identify how much it would cost Current Designs to produce the coolers. After careful analysis, the following costs were identified.

| | | | |
|---|---|---|---|
| Direct materials | $80/unit | Variable overhead | $20/unit |
| Direct labor | $60/unit | Fixed overhead | $1,000 |

Current Designs would be able to modify an existing mold to produce the coolers. The cost of these modifications would be approximately $2,000.

**Instructions**

**a.** Prepare an incremental analysis to determine whether Current Designs should accept this special order to produce the coolers.

**b.** Discuss additional factors that Mike and Diane should consider if Current Designs is currently operating at full capacity.

**Situation 2**

Current Designs is always working to identify ways to increase efficiency while becoming more environmentally conscious. During a recent brainstorming session, one employee suggested to Diane Buswell, controller, that the company should consider replacing the current rotomold oven as a way to realize savings from reduced energy consumption. The oven operates on natural gas, using 17,000 therms of natural gas for an entire year. A new, energy-efficient rotomold oven would operate on 15,000 therms of natural gas for an entire year. After seeking out price quotes from a few suppliers, Diane determined that it would cost approximately $250,000 to purchase a new, energy-efficient rotomold oven. She determines that the expected useful life of the new oven would be 10 years, and it would have no salvage value at the end of its useful life. Current Designs would be able to sell the current oven for $10,000.

**Instructions**

**a.** Prepare an incremental analysis to determine if Current Designs should purchase the new rotomold oven, assuming that the average price for natural gas over the next 10 years will be $0.65 per therm.

**b.** Diane is concerned that natural gas prices might increase at a faster rate over the next 10 years. If the company projects that the average natural gas price of the next 10 years could be as high as $0.85 per therm, discuss how that might change your conclusion in (a).

**Situation 3**

One of Current Designs' competitive advantages is found in the ingenuity of its owner and CEO, Mike Cichanowski. His involvement in the design of kayak molds and production techniques has led to Current Designs being recognized as an industry leader in the design and production of kayaks. This ingenuity was evident in an improved design of one of the most important components of a kayak, the seat. The "Revolution Seating System" is a one-of-a-kind, rotating axis seat that gives unmatched, full-contact, under-leg support. It is quickly adjustable with a lever-lock system that allows for a customizable seat position that maximizes comfort for the rider.

Having just designed the "Revolution Seating System," Current Designs must now decide whether to produce the seats internally or buy them from an outside supplier. The costs for Current Designs to produce the seats are as follows.

| | | | |
|---|---|---|---|
| Direct materials | $20/unit | Direct labor | $15/unit |
| Variable overhead | $12/unit | Fixed overhead | $20,000 |

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Current Designs will need to produce 3,000 seats this year; 25% of the fixed overhead will be avoided if the seats are purchased from an outside vendor. After soliciting prices from outside suppliers, the company determined that it will cost $50 to purchase a seat from an outside vendor.

### Instructions

**a.** Prepare an incremental analysis showing whether Current Designs should make or buy the "Revolution Seating System."

**b.** Would your answer in (a) change if the productive capacity released by not making the seats could be used to produce income of $20,000?

### Waterways

(*Note:* This is a continuation of the Waterways case from Chapters 19–22.)

**WP23** Waterways Corporation is considering various business opportunities. It wants to make the best use of its production facilities to maximize income. This problem asks you to help Waterways do incremental analysis on these various opportunities.

*Go to* **WileyPLUS** *for complete case details and instructions.*

## Expand Your Critical Thinking

### Decision-Making Across the Organization

**CT23.1** Aurora Company is considering the purchase of a new machine. The invoice price of the machine is $140,000, freight charges are estimated to be $4,000, and installation costs are expected to be $6,000. Salvage value of the new equipment is expected to be zero after a useful life of 5 years. Existing equipment could be retained and used for an additional 5 years if the new machine is not purchased. At that time, the salvage value of the equipment would be zero. If the new machine is purchased now, the existing machine would have to be scrapped. Aurora's accountant, Lisah Huang, has accumulated the following data regarding annual sales and expenses with and without the new machine.

1. Without the new machine, Aurora can sell 12,000 units of product annually at a per unit selling price of $100. If the new machine is purchased, the number of units produced and sold would increase by 10%, and the selling price would remain the same.
2. The new machine is faster than the old machine, and it is more efficient in its usage of materials. With the old machine the gross profit rate will be 25% of sales, whereas the rate will be 30% of sales with the new machine.
3. Annual selling expenses are $180,000 with the current equipment. Because the new equipment would produce a greater number of units to be sold, annual selling expenses are expected to increase by 10% if it is purchased.
4. Annual administrative expenses are expected to be $100,000 with the old machine, and $113,000 with the new machine.
5. The current book value of the existing machine is $36,000. Aurora uses straight-line depreciation.

### Instructions

With the class divided into groups, prepare an incremental analysis for the 5 years showing whether Aurora should keep the existing machine or buy the new machine. (Ignore income tax effects.)

### Managerial Analysis

**CT23.2** MiniTek manufactures private-label small electronic products, such as alarm clocks, calculators, kitchen timers, stopwatches, and automatic pencil sharpeners. Some of the products are sold as sets, and others are sold individually. Products are studied as to their sales potential, and then cost estimates are made. The Engineering Department develops production plans, and then production begins. The company has generally had very successful product introductions. Only two products introduced by the company have been discontinued.

One of the products currently sold is a multi-alarm clock. The clock has four alarms that can be programmed to sound at various times and for varying lengths of time. The company has experienced

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a great deal of difficulty in making the circuit boards for the clocks. The production process has never operated smoothly. The product is unprofitable at the present time, primarily because of warranty repairs and product recalls. Two models of the clocks were recalled, for example, because they sometimes caused an electric shock when the alarms were being shut off. The Engineering Department is attempting to revise the manufacturing process, but the revision will take another 6 months at least.

The clocks were very popular when they were introduced, and since they are private-label, the company has not suffered much from the recalls. Presently, the company has a very large order for several items from **Kmart Stores**. The order includes 5,000 of the multi-alarm clocks. When the company suggested that Kmart purchase the clocks from another manufacturer, Kmart threatened to rescind the entire order unless the clocks were included.

The company has therefore investigated the possibility of having another company make the clocks for them. The clocks were bid for the Kmart order based on an estimated $6.90 cost to manufacture:

| | |
|---|---|
| Circuit board, 1 each @ $2.00 | $2.00 |
| Plastic case, 1 each @ $0.80 | 0.80 |
| Alarms, 4 @ $0.15 each | 0.60 |
| Labor, 15 minutes @ $12/hour | 3.00 |
| Overhead, $2.00 per labor hour | 0.50 |

MiniTek could purchase clocks to fill the Kmart order for $10 from Trans-Tech Asia, a Korean manufacturer with a very good quality record. Trans-Tech has offered to reduce the price to $7.50 after MiniTek has been a customer for 6 months, placing an order of at least 1,000 units per month. If MiniTek becomes a "preferred customer" by purchasing 15,000 units per year, the price would be reduced still further to $4.50.

Omega Products, a local manufacturer, has also offered to make clocks for MiniTek. They have offered to sell 5,000 clocks for $5 each. However, Omega Products has been in business for only 6 months. They have experienced significant turnover in their labor force, and the local press has reported that the owners may face tax evasion charges soon. The owner of Omega Products is an electronic engineer, however, and the quality of the clocks is likely to be good.

If MiniTek decides to purchase the clocks from either Trans-Tech or Omega, all the costs to manufacture could be avoided, except a total of $1,000 in overhead costs for machine depreciation. The machinery is fairly new, and has no alternate use.

### Instructions

**a.** What is the difference in profit under each of the alternatives if the clocks are to be sold for $14.50 each to Kmart?

**b.** What are the most important nonfinancial factors that MiniTek should consider when making this decision?

**c.** What do you think MiniTek should do in regard to the Kmart order? What should it do in regard to continuing to manufacture the multi-alarm clocks? Be prepared to defend your answer.

## Real-World Focus

**CT23.3** Founded in 1983 and foreclosed in 1996 **Beverly Hills Fan Company** was located in Woodland Hills, California. With 23 employees and sales of less than $10 million, the company was relatively small. Management felt that there was potential for growth in the upscale market for ceiling fans and lighting. They were particularly optimistic about growth in Mexican and Canadian markets.

Presented below is information from the president's letter in one of the company's last annual reports.

**Beverly Hills Fan Company**
President's Letter

An aggressive product development program was initiated during the past year resulting in new ceiling fan models planned for introduction this year. Award winning industrial designer Ron Rezek created several new fan models for the Beverly Hills Fan and L.A. Fan lines, including a new Showroom Collection, designed specifically for the architectural and designer markets. Each of these models has received critical acclaim, and order commitments for this year have been outstanding. Additionally, our Custom Color and special order fans continued to enjoy increasing popularity and sales gains as more and more customers desire fans that match their specific interior decors. Currently, Beverly Hills Fan Company offers a product line of over 100 models of contemporary, traditional, and transitional ceiling fans.

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### Instructions

**a.** What points did the company management need to consider before deciding to offer the special-order fans to customers?

**b.** How would have incremental analysis been employed to assist in this decision?

## Communication Activity

**CT23.4** Hank Jewell is a production manager at a metal fabricating plant. Last night, he read an article about a new piece of equipment that would dramatically reduce his division's costs. Hank was very excited about the prospect, and the first thing he did this morning was to bring the article to his supervisor, Preston Thiese, the plant manager. The following conversation occurred:

Hank: Preston, I thought you would like to see this article on the new PDD1130; they've made some fantastic changes that could save us millions of dollars.

Preston: I appreciate your interest, Hank, but I actually have been aware of the new machine for two months. The problem is that we just bought a new machine last year. We spent $2 million on that machine, and it was supposed to last us 12 years. If we replace it now, we would have to write its book value off of the books for a huge loss. If I go to top management now and say that I want a new machine, they will fire me. I think we should use our existing machine for a couple of years, and then when it becomes obvious that we have to have a new machine, I will make the proposal.

### Instructions

Hank just completed a course in managerial accounting, and he believes that Preston is making a big mistake. Write a memo from Hank to Preston explaining Preston's decision-making error.

## Ethics Case

**CT23.5** Blake Romney became Chief Executive Officer of Peters Inc. two years ago. At the time, the company was reporting lagging profits, and Blake was brought in to "stir things up." The company has three divisions, electronics, fiber optics, and plumbing supplies. Blake has no interest in plumbing supplies, and one of the first things he did was to put pressure on his accountants to reallocate some of the company's fixed costs away from the other two divisions to the plumbing division. This had the effect of causing the plumbing division to report losses during the last two years; in the past it had always reported low, but acceptable, net income. Blake felt that this reallocation would shine a favorable light on him in front of the board of directors because it meant that the electronics and fiber optics divisions would look like they were improving. Given that these are "businesses of the future," he believed that the stock market would react favorably to these increases, while not penalizing the poor results of the plumbing division. Without this shift in the allocation of fixed costs, the profits of the electronics and fiber optics divisions would not have improved. But now the board of directors has suggested that the plumbing division be closed because it is reporting losses. This would mean that nearly 500 employees, many of whom have worked for Peters their whole lives, would lose their jobs.

### Instructions

**a.** If a division is reporting losses, does that necessarily mean that it should be closed?

**b.** Was the reallocation of fixed costs across divisions unethical?

**c.** What should Blake do?

## All About You

**CT23.6** Managerial accounting techniques can be used in a wide variety of settings. As we have frequently pointed out, you can use them in many personal situations. They also can be useful in trying to find solutions for societal issues that appear to be hard to solve.

### Instructions

Read the *Fortune* article, "The Toughest Customers: How Hardheaded Business Metrics Can Help the Hard-Core Homeless," by Cait Murphy (do an Internet search on the title), and then answer the following questions.

**a.** How does the article define "chronic" homelessness?

**b.** In what ways does homelessness cost a city money? What are the estimated costs of a chronic homeless person to various cities?

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**c.** What are the steps suggested to address the problem?

**d.** What is the estimated cost of implementing this program in New York? What results have been seen?

**e.** In terms of incremental analysis, frame the relevant costs in this situation.

## Considering Your Costs and Benefits

**CT23.7** School costs money. Is this an expenditure that you should have avoided? A year of tuition at a public four-year college costs about $8,655, and a year of tuition at a public two-year college costs about $1,359. If you did not go to college, you might avoid mountains of school-related debt. In fact, each year, about 600,000 students decide to drop out of school. Many of them never return. Suppose that you are working two jobs and going to college, and that you are not making ends meet. Your grades are suffering due to your lack of available study time. You feel depressed. Should you drop out of school?

**YES:** You can always go back to school. If your grades are bad and you are depressed, what good is school doing you anyway?

**NO:** Once you drop out, it is very hard to get enough momentum to go back. Dropping out will dramatically reduce your long-term opportunities. It is better to stay in school, even if you take only one class per semester. While you cannot go back and redo your initial decision, you can look at some facts to evaluate the wisdom of your decision.

### Instructions

Write a response indicating your position regarding this situation. Provide support for your view.

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Deidre Schoo/The New York Times/Redux Pictures

# Budgetary Planning

## Chapter Preview

As the following Feature Story about **BabyCakes NYC** indicates, budgeting is critical to financial well-being. As a student, you budget your study time and your money. Families budget income and expenses. Governmental agencies budget revenues and expenditures. Businesses use budgets in planning and controlling their operations.

Our primary focus in this chapter is budgeting—specifically, how budgeting is used as a planning tool by management. Through budgeting, it should be possible for management to maintain enough cash to pay creditors as well as have sufficient raw materials to meet production requirements and adequate finished goods to meet expected sales.

## Feature Story

### What's in Your Cupcake?

The best business plans often result from meeting a basic human need. Many people would argue that cupcakes aren't necessarily essential to support life. But if you found out that allergies were going to deprive you forever of cupcakes, you might view baked goods in a whole new light. Such was the dilemma faced by Erin McKenna. When she found that her wheat allergies prevented her from consuming most baked sweets, she decided to open a bakery that met her needs. Her vegan and kosher bakery, **BabyCakes NYC**, advertises that it is refined-sugar-free, gluten-free, wheat-free, soy-free, dairy-free, and egg-free. So if you're one of the more than 10 million Americans with a food allergy or

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some other dietary constraint, this is probably the bakery for you.

Those of you that have spent a little time in the kitchen might wonder what kind of ingredients BabyCakes uses. To avoid the gluten in wheat, the company uses **Bob's Red Mill** rice flour, a garbanzo/fava bean mix, or oat flours. How does BabyCakes get all those great frosting colors without artificial dyes? The company achieves pink with beets, green with chlorophyll, yellow with turmeric, and blue/purple with red cabbage. To eliminate dairy and soy, the bakers use rice and coconut milk. And finally, to accomplish over-the-top deliciousness without refined sugar, BabyCakes uses agave nectar (a sweetener derived from cactus) and evaporated cane juice (often referred to as organic or unrefined sugar).

With cupcakes priced at over $3 per item and a brisk business, you might think that making money is easy for BabyCakes. But all of these specialty ingredients don't come cheap. In addition, BabyCakes' shops are located in Manhattan, Los Angeles, and Orlando, so rent isn't exactly inexpensive either. Despite these costs, Erin's first store made a profit its first year and did even better in later years. To achieve this profitability, Erin relies on careful budgeting. First, she needs to estimate how many items she will sell. Then, she determines her needs for materials, labor, and overhead. Prices for raw materials can fluctuate significantly, so Erin needs to update her budget accordingly. Finally, she has to budget for other products such as her cookbooks, baking kits, and T-shirts. Without a budget, Erin's business might not be so sweet.

**Video** **Watch the *BabyCakes NYC* video in WileyPLUS to learn more about real-world budgetary planning.**

# Chapter Outline

## LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** State the essentials of effective budgeting and the components of the master budget. | • Budgeting and accounting<br>• Benefits of budgeting<br>• Effective budgeting essentials<br>• Master budget | **DO IT! 1** Budget Terminology |
| **LO 2** Prepare budgets for sales, production, and direct materials. | • Sales budget<br>• Production budget<br>• Direct materials budget | **DO IT! 2** Sales, Production, and Direct Materials Budgets |
| **LO 3** Prepare budgets for direct labor, manufacturing overhead, and selling and administrative expenses, and a budgeted income statement. | • Direct labor budget<br>• Manufacturing overhead budget<br>• Selling and administrative expense budget<br>• Budgeted income statement | **DO IT! 3** Budgeted Income Statement |
| **LO 4** Prepare a cash budget and a budgeted balance sheet. | • Cash budget<br>• Budgeted balance sheet | **DO IT! 4** Cash Budget |
| **LO 5** Apply budgeting principles to nonmanufacturing companies. | • Merchandisers<br>• Service companies<br>• Not-for-profit organizations | **DO IT! 5** Merchandise Purchases Budget |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with Orion for additional tutorials and practice opportunities.**

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# Effective Budgeting and the Master Budget

**LEARNING OBJECTIVE 1**

State the essentials of effective budgeting and the components of the master budget.

Planning is one of management's major responsibilities. As explained in Chapter 19, **planning** is the process of establishing company-wide objectives. A successful organization makes both long-term and short-term plans. These plans establish the objectives of the company and the proposed approach to accomplish them.

A **budget** is a formal written statement of management's plans for a specified future time period, expressed in financial terms. It represents the primary method of communicating agreed-upon objectives throughout the organization. Once adopted, a budget becomes an important basis for evaluating performance. It promotes efficiency and serves as a deterrent to waste and inefficiency. We consider the role of budgeting as a **control device** in Chapter 25.

## Budgeting and Accounting

Accounting information makes major contributions to the budgeting process. From the accounting records, companies obtain historical data on revenues, costs, and expenses. These data are helpful in formulating future budget goals.

Accountants are responsible for presenting management's budgeting goals in financial terms. In this role, they translate management's plans and communicate the budget to employees throughout the company. They prepare periodic budget reports that provide the basis for measuring performance and comparing actual results with planned objectives. The budget itself and the administration of the budget, however, are entirely management responsibilities.

## The Benefits of Budgeting

The primary benefits of budgeting are as follows.

1. It requires all levels of management to **plan ahead** and to formalize goals on a recurring basis.
2. It provides **definite objectives** for evaluating performance at each level of responsibility.
3. It creates an **early warning system** for potential problems so that management can make changes before things get out of hand.
4. It facilitates the **coordination of activities** within the business. It does this by correlating the goals of each segment with overall company objectives. Thus, the company can integrate production and sales promotion with expected sales.
5. It results in greater **management awareness** of the entity's overall operations and the impact on operations of external factors, such as economic trends.
6. It **motivates personnel** throughout the organization to meet planned objectives.

A budget is an aid to management; it is not a *substitute* for management. A budget cannot operate or enforce itself. Companies can realize the benefits of budgeting only when managers carefully administer budgets.

## Essentials of Effective Budgeting

Effective budgeting depends on a **sound organizational structure**. In such a structure, authority and responsibility for all phases of operations are clearly defined. Budgets based on **research and analysis** are more likely to result in realistic goals that will contribute to the

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growth and profitability of a company. And, the effectiveness of a budget program is directly related to its **acceptance by all levels of management**.

Once adopted, the budget is an important tool for evaluating performance. Managers should systematically and periodically review variations between actual and expected results to determine their cause(s). However, individuals should not be held responsible for variations that are beyond their control.

## Length of the Budget Period

The budget period is not necessarily one year in length. **A budget may be prepared for any period of time.** Various factors influence the length of the budget period. These factors include the type of budget, the nature of the organization, the need for periodic appraisal, and prevailing business conditions.

The budget period should be long enough to provide an attainable goal under normal business conditions. Ideally, the time period should minimize the impact of seasonal or cyclical fluctuations. On the other hand, the budget period should not be so long that reliable estimates are impossible.

The **most common budget period is one year**. The annual budget, in turn, is often supplemented by monthly and quarterly budgets. Many companies use **continuous 12-month budgets**. These budgets drop the month just ended and add a future month. One benefit of continuous budgeting is that it keeps management planning a full year ahead.

## Accounting Across the Organization

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### Businesses Often Feel Too Busy to Plan for the Future

A study by Willard & Shullman Group Ltd. found that fewer than 14% of businesses with less than 500 employees do an annual budget or have a written business plan. For many small businesses, the basic assumption is that, "As long as I sell as much as I can, and keep my employees paid, I'm doing OK." A few small business owners even say that they see no need for budgeting and planning. Most small business owners, though, say that they understand that budgeting and planning are critical for survival and growth. But given the long hours that they already work addressing day-to-day challenges, they also say that they are "just too busy to plan for the future."

**Describe a situation in which a business "sells as much as it can" but cannot "keep its employees paid." (Go to WileyPLUS for this answer and additional questions.)**

## The Budgeting Process

The development of the budget for the coming year generally starts several months before the end of the current year. The budgeting process usually begins with the collection of data from each organizational unit of the company. Past performance is often the starting point from which future budget goals are formulated.

The budget is developed within the framework of a **sales forecast**. This forecast shows potential sales for the industry and the company's expected share of such sales. Sales forecasting involves a consideration of various factors: (1) general economic conditions, (2) industry trends, (3) market research studies, (4) anticipated advertising and promotion, (5) previous market share, (6) changes in prices, and (7) technological developments. The input of sales personnel and top management is essential to the sales forecast.

In small companies like **BabyCakes NYC**, the budgeting process is often informal. In larger companies, a **budget committee** has responsibility for coordinating the preparation

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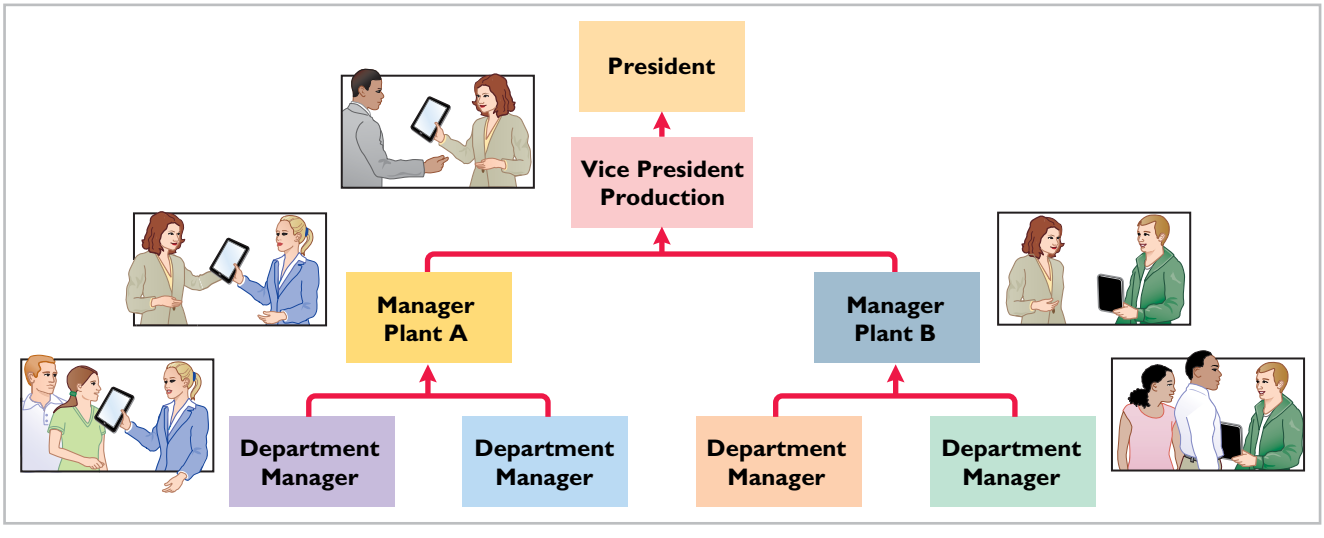
of the budget. The committee ordinarily includes the president, treasurer, chief accountant (controller), and management personnel from each of the major areas of the company, such as sales, production, and research. The budget committee serves as a review board where managers can defend their budget goals and requests. Differences are reviewed, modified if necessary, and reconciled. The budget is then put in its final form by the budget committee, approved, and distributed.

## Budgeting and Human Behavior

A budget can have a significant impact on human behavior. If done well, it can inspire managers to higher levels of performance. However, if done poorly, budgets can discourage additional effort and pull down the morale of managers. Why do these diverse effects occur? The answer is found in how the budget is developed and administered.

In developing the budget, each level of management should be invited to participate. This "bottom-to-top" approach is referred to as **participative budgeting**. One benefit of participative budgeting is that lower-level managers have more detailed knowledge of their specific area and thus are able to provide more accurate budgetary estimates. Also, when lower-level managers participate in the budgeting process, they are more likely to perceive the resulting budget as fair. The overall goal is to reach agreement on a budget that the managers consider fair and achievable, but which also meets the corporate goals set by top management. When this goal is met, the budget will provide positive motivation for the managers. In contrast, if managers view the budget as unfair and unrealistic, they may feel discouraged and uncommitted to budget goals. The risk of having unrealistic budgets is generally greater when the budget is developed from top management down to lower management than vice versa. **Illustration 24.1** graphically displays the flow of budget data from bottom to top under participative budgeting.

**ILLUSTRATION 24.1** **Flow of budget data under participative budgeting**




For example, at one time, in an effort to revive its plummeting stock price, **Time Warner**'s top management determined and publicly announced bold new financial goals for the coming year. Unfortunately, these goals were not reached. The next year, the company got a new CEO who said the company would now actually set reasonable goals that it could meet. The new budgets were developed with each operating unit setting what it felt were optimistic but attainable goals. In the words of one manager, using this approach created a sense of teamwork.

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Participative budgeting does, however, have potential disadvantages. First, the "give and take" of participative budgeting is time-consuming (and thus more costly). Under a "top-down" approach, the budget is simply developed by top management and then dictated to lower-level managers. A second disadvantage is that participative budgeting can foster budgetary "gaming" through budgetary slack. **Budgetary slack** occurs when managers intentionally underestimate budgeted revenues or overestimate budgeted expenses in order to make it easier to achieve budgetary goals for their division. To minimize budgetary slack, higher-level managers must carefully review and thoroughly question the budget projections provided to them by employees whom they supervise.

**ETHICS NOTE**

**Unrealistic budgets can lead to unethical employee behavior such as cutting corners on the job or distorting internal financial reports.**

For the budget to be effective, top management must completely support the budget. The budget is an important tool for evaluating performance. It also can be used as a positive aid in achieving projected goals. The effect of an evaluation is positive when top management tempers criticism with advice and assistance. In contrast, a manager is likely to respond negatively if top management uses the budget exclusively to assess blame. A budget should not be used as a pressure device to force improved performance (see **Ethics Note**). In sum, a budget can be a manager's friend or foe.

### Budgeting and Long-Range Planning

**HELPFUL HINT**

**A budget has more detail and is more concerned with short-term goals than a long-range plan.**

Budgeting and long-range planning are not the same. One important difference is the **time period involved**. The maximum length of a budget is usually one year, and budgets are often prepared for shorter periods of time, such as a month or a quarter. In contrast, long-range planning usually encompasses a period of at least five years (see **Helpful Hint**).

A second significant difference is in **emphasis**. Budgeting focuses on achieving specific short-term goals, such as meeting annual profit objectives. **Long-range planning**, on the other hand, identifies long-term goals, selects strategies to achieve those goals, and develops policies and plans to implement the strategies. In long-range planning, management also considers anticipated trends in the economic and political environment and how the company should cope with them.

The final difference between budgeting and long-range planning relates to the **amount of detail presented**. Budgets, as you will see in this chapter, can be very detailed. Long-range plans contain considerably less detail. The data in long-range plans are intended more for a review of progress toward long-term goals than as a basis of control for achieving specific results. The primary objective of long-range planning is to develop the best strategy to maximize the company's performance over an extended future period.

## The Master Budget

The term "budget" is actually a shorthand term to describe a variety of budget documents. All of these documents are combined into a master budget. The **master budget** is a set of interrelated budgets that constitutes a plan of action for a specified time period.

The master budget contains two classes of budgets. **Operating budgets** are the individual budgets that result in the preparation of the budgeted income statement. These budgets establish goals for the company's sales and production personnel. In contrast, **financial budgets** focus primarily on the cash resources needed to fund expected operations and planned capital expenditures. Financial budgets include the capital expenditure budget, the cash budget, and the budgeted balance sheet.

**Illustration 24.2** shows the individual budgets included in a master budget, and the sequence in which they are prepared. The company first develops the operating budgets, beginning with the sales budget. Then, it prepares the financial budgets. We will explain and illustrate each budget shown in Illustration 24.2 except the capital expenditure budget. That budget is discussed under the topic of capital budgeting in Chapter 27.

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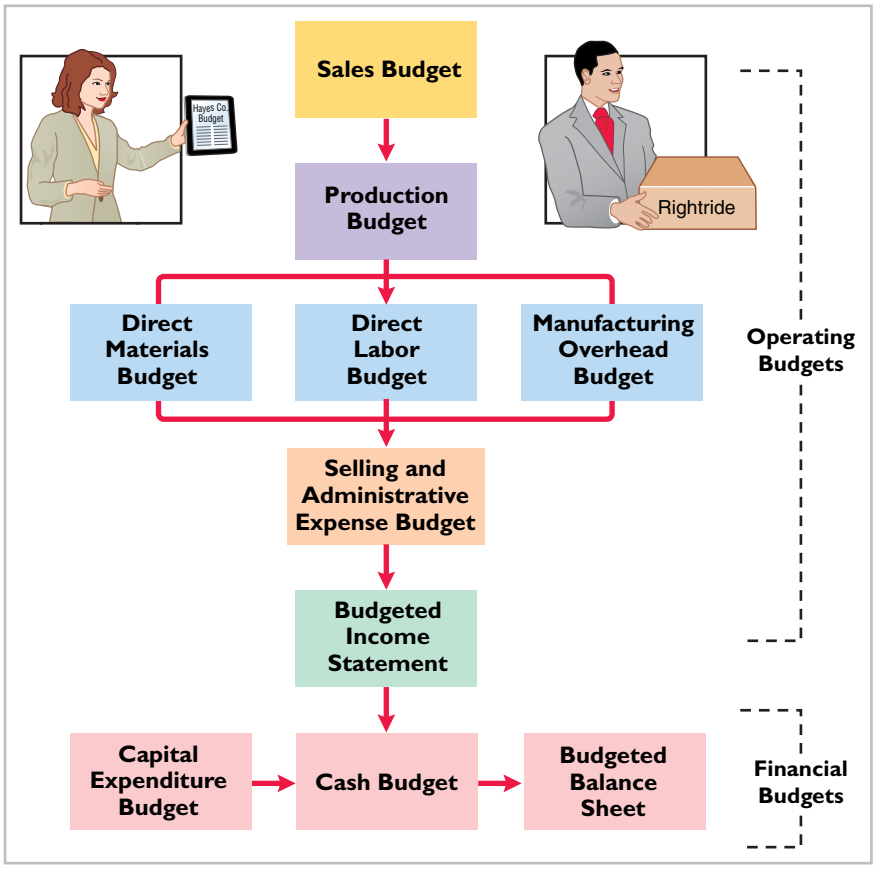


**ILLUSTRATION 24.2**
**Components of the master budget**

## DO IT! 1 | Budget Terminology

Use this list of terms to complete the sentences that follow.

| | |
|---|---|
| Long-range planning | Participative budgeting |
| Sales forecast | Operating budgets |
| Master budget | Financial budgets |

1. A _____ shows potential sales for the industry and a company's expected share of such sales.
2. _____ are used as the basis for the preparation of the budgeted income statement.
3. The _____ is a set of interrelated budgets that constitutes a plan of action for a specified time period.
4. _____ identifies long-term goals, selects strategies to achieve these goals, and develops policies and plans to implement the strategies.
5. Lower-level managers are more likely to perceive results as fair and achievable under a _____ approach.
6. _____ focus primarily on the cash resources needed to fund expected operations and planned capital expenditures.

**ACTION PLAN**

- Understand the budgeting process, including the importance of the sales forecast.
- Understand the difference between an operating budget and a financial budget.
- Differentiate budgeting from long-range planning.
- Realize that the master budget is a set of interrelated budgets.

### Solution

1. Sales forecast.
2. Operating budgets.
3. Master budget.
4. Long-range planning.
5. Participative budgeting.
6. Financial budgets.

Related exercise material: **BE24.1, DO IT! 24.1, and E24.1.**

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# Sales, Production, and Direct Materials Budgets

**LEARNING OBJECTIVE 2**

Prepare budgets for sales, production, and direct materials.

We use a case study of Hayes Company in preparing the operating budgets. Hayes manufactures and sells an ergonomically designed bike seat with multiple customizable adjustments, called the Rightride. The budgets are prepared by quarters for the year ending December 31, 2020. Hayes Company begins its annual budgeting process on September 1, 2019, and it completes the budget for 2020 by December 1, 2019. The company begins by preparing the budgets for sales, production, and direct materials.

## Sales Budget

**HELPFUL HINT**

**For a retail or manufacturing company, the sales budget is the starting point for the master budget. It sets the level of activity for other functions such as production and purchasing.**

As shown in the master budget in Illustration 24.2, **the sales budget is prepared first**. Each of the other budgets depends on the sales budget (see **Helpful Hint**). The **sales budget** is derived from the sales forecast. It represents management's best estimate of sales revenue for the budget period. An inaccurate sales budget may adversely affect net income. For example, an overly optimistic sales budget may result in excessive inventories that may have to be sold at reduced prices. In contrast, an unduly pessimistic sales budget may result in loss of sales revenue due to inventory shortages.

For example, at one time **Amazon.com** significantly underestimated demand for its e-book reader, the Kindle. As a consequence, it did not produce enough Kindles and was completely sold out well before the holiday shopping season. Not only did this represent a huge lost opportunity for Amazon, but it exposed the company to potential competitors, who were eager to provide customers with alternatives to the Kindle.

Forecasting sales is challenging. For example, consider the forecasting challenges faced by major sports arenas, whose revenues depend on the success of the home team. **Madison Square Garden**'s revenues from April to June were $193 million during a year when the Knicks made the NBA playoffs. But revenues were only $133.2 million a couple of years later when the team did not make the playoffs. Or, consider the challenges faced by Hollywood movie producers in predicting the complicated revenue stream produced by a new movie. Movie theater ticket sales represent only 20% of total revenue. The bulk of revenue comes from global sales, DVDs, video-on-demand, merchandising products, and videogames, all of which are difficult to forecast.

The sales budget is prepared by multiplying the expected unit sales volume for each product by its anticipated unit selling price. Hayes Company expects sales volume to be 3,000 units in the first quarter, with 500-unit increases in each succeeding quarter. **Illustration 24.3** shows the sales budget for the year, by quarter, based on a sales price of $60 per unit.

**ILLUSTRATION 24.3**
**Sales budget**

Hayes Company Sales Budget

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **Hayes Company** | | | | | |
| 2 | **Sales Budget** | | | | | |
| 3 | **For the Year Ending December 31, 2020** | | | | | |
| 4 | | Quarter | | | | |
| 5 | | 1 | 2 | 3 | 4 | Year |
| 6 | Expected sales units | 3,000 | 3,500 | 4,000 | 4,500 | 15,000 |
| 7 | Unit selling price | × $60 | × $60 | × $60 | × $60 | × $60 |
| 8 | Total sales | $180,000 | $210,000 | $240,000 | $270,000 | $900,000 |

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Some companies classify the anticipated sales revenue as cash or credit sales and by geographic regions, territories, or salespersons.

## Service Company Insight

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### The Implications of Budgetary Optimism

Companies aren't the only ones that have to estimate revenues. Governments at all levels (e.g., local, state or federal) prepare annual budgets. Most are required to submit balanced budgets, that is, estimated revenues are supposed to cover anticipated expenditures. Unfortunately, estimating government revenues can be as difficult as, or even more difficult than, estimating company revenues. For example, during a recent year, the median state government overestimated revenues by 10.2%, with four state governments missing by more than 25%.

What makes estimation so difficult for these governments? Most states rely on income taxes, which fluctuate widely with economic gyrations. Some states rely on sales taxes, which are problematic because the laws regarding sales taxes haven't adjusted for the shift from manufacturing to service companies and from brick-and-mortar stores to online sales.

**Source:** Conor Dougherty, "States Fumble Revenue Forecasts," *Wall Street Journal Online* (March 2, 2011).

**Why is it important that government budgets accurately estimate future revenues during economic downturns? (Go to WileyPLUS for this answer and additional questions.)**

# Production Budget

The **production budget** shows the number of units of a product to produce to meet anticipated sales demand. Production requirements are determined from the formula shown in **Illustration 24.4.**[1]

| Expected Sales Units | + | Desired Ending Finished Goods Units | − | Beginning Finished Goods Units | = | Required Production Units |
|---|---|---|---|---|---|---|

**ILLUSTRATION 24.4**
**Production requirements formula**

**Illustration 24.5** shows the production budget for Hayes Company, which is based on the formula shown in Illustration 24.4. For example, in the first quarter, expected sales are 3,000 units. Hayes Company believes it can meet future sales requirements by maintaining an ending inventory equal to 20% of the next quarter's budgeted sales volume. The ending finished goods inventory for the first quarter is 700 units (.20 × anticipated second-quarter sales of 3,500 units). If we then subtract the beginning finished goods units of 600 units (20% of first-quarter sales), we arrive at required production of 3,100 units. Illustration 24.5 shows the production budget.

**A realistic estimate of ending inventory is essential in scheduling production requirements.** Excessive inventories in one quarter may lead to cutbacks in production and employee layoffs in a subsequent quarter. On the other hand, inadequate inventories may result either in added costs for overtime work or in lost sales.

The production budget, in turn, provides the basis for the budgeted costs for each manufacturing cost element, as explained in the following discussion.

[1] This formula ignores any work in process inventories, which are assumed to be nonexistent in Hayes Company.

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**ILLUSTRATION 24.5** **Production budget**

Hayes Company Production Budget

| | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **Hayes Company** | | | | | | | | | |
| 2 | **Production Budget** | | | | | | | | | |
| 3 | **For the Year Ending December 31, 2020** | | | | | | | | | |
| 4 | | Quarter | | | | | | | | |
| 5 | | 1 | | 2 | | 3 | | 4 | | Year |
| 6 | Expected sales units (Illustration 24.3) | 3,000 | | 3,500 | | 4,000 | | 4,500 | | |
| 7 | Add: Desired ending finished goods units[a] | 700 | | 800 | | 900 | | 1,000[b] | | |
| 8 | Total required units | 3,700 | | 4,300 | | 4,900 | | 5,500 | | |
| 9 | Less: Beginning finished goods units[c] | 600 | | 700 | | 800 | | 900 | | |
| 10 | **Required production units** | **3,100** | | **3,600** | | **4,100** | | **4,600** | | **15,400** |
| 11 | | | | | | | | | | |
| 12 | [a]20% of next quarter's sales | | | | | | | | | |
| 13 | [b]Expected 2021 first-quarter sales, 5,000 units × .20 | | | | | | | | | |
| 14 | [c]20% of estimated first-quarter 2020 sales units | | | | | | | | | |

# Direct Materials Budget

The **direct materials budget** shows both the quantity and cost of direct materials to be purchased. The first step toward computing the cost of direct materials purchases is to compute the direct materials units required for production. Illustration 24.6 shows the formula for this amount.

**ILLUSTRATION 24.6**
**Formula for direct materials units required for production**

| Units to Be produced | × | Direct Materials Units per Unit of Unit Produced | = | Direct Materials Units Required for Production |
|---|---|---|---|---|

Employing this formula, Illustration 24.9 shows that for Hayes Company's first quarter of production, there are 3,100 units to be produced, and each unit produced requires two pounds of raw materials. Therefore, the units of direct materials required for production is 6,200 pounds (3,100 × 2).

Next we can compute the direct materials units to be purchased using the formula shown in Illustration 24.7.

**ILLUSTRATION 24.7**
**Formula for direct materials units to be purchased**

| Direct Materials Units Required for Production | + | Desired Ending Direct Materials Units | − | Beginning Direct Materials Units | = | Direct Materials Units to Be Purchased |
|---|---|---|---|---|---|---|

Employing this formula, Illustration 24.9 shows that for Hayes Company's first quarter of production, the direct materials units required for production is 6,200 pounds (computed above). To that we add the desired ending direct materials units. For Hayes, this is assumed to be 10% of the next quarter's production requirements, or 720 pounds (.10 × 7,200). Then, we subtract the beginning direct materials units of 620 pounds (10% of this quarter's production requirements of 6,200) to arrive at the direct materials units to be purchased of 6,300 pounds.

Finally, to arrive at the cost of direct materials purchases, we employ the formula shown in Illustration 24.8.

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| Direct Materials Units to Be Purchased | × | Cost per Direct Materials Unit | = | Cost of Direct Materials Purchases |
|---|---|---|---|---|

**ILLUSTRATION 24.8** Formula for cost of direct materials purchases

Employing this formula, **Illustration 24.9** shows that for Hayes Company's first quarter of production, the cost of direct materials purchases is computed by multiplying the units to be purchased of 6,300 pounds by the cost per direct materials unit of $4 per pound, to arrive at $25,200 (6,300 × $4).

**ILLUSTRATION 24.9** Direct materials budget

Hayes Company Direct Materials Budget

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**Hayes Company**
**Direct Materials Budget**
**For the Year Ending December 31, 2020**

| | Quarter | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | Year |
| Units to be produced (Illustration 24.5) | 3,100 | 3,600 | 4,100 | 4,600 | |
| Direct materials units per unit produced | × 2 | × 2 | × 2 | × 2 | |
| Direct materials units required for production | 6,200 | 7,200 | 8,200 | 9,200 | |
| Add: Desired ending direct materials (pounds)[a] | 720 | 820 | 920 | 1,020[c] | |
| Total materials required | 6,920 | 8,020 | 9,120 | 10,220 | |
| Less: Beginning direct materials (pounds) | 620[b] | 720 | 820 | 920 | |
| Direct materials units to be purchased (pounds) | 6,300 | 7,300 | 8,300 | 9,300 | |
| Cost per pound | × $4 | × $4 | × $4 | × $4 | |
| Cost of direct materials purchases | $25,200 | $29,200 | $33,200 | $37,200 | $124,800 |

[a] 10% of next quarter's production requirements
[b] 10% of estimated first-quarter pounds needed for production
[c] Total pounds needed for production is assumed to be 10,200 for the first quarter of 2021

**The desired ending inventory is again a key component in the budgeting process.** For example, inadequate inventories could result in temporary shutdowns of production. Because of its close proximity to suppliers, Hayes Company maintains an ending inventory of raw materials equal to 10% of the next quarter's production requirements.

## Management Insight

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### Betting That Prices Won't Fall

Sometimes things happen that cause managers to reevaluate their normal purchasing patterns. Consider, for example, the predicament that businesses faced when the price of many raw materials skyrocketed. Rubber, cotton, oil, corn, wheat, steel, copper, and spices—prices for seemingly everything were going straight up. Anticipating that prices might continue to go up, many managers decided to stockpile much larger quantities of raw materials to avoid paying even higher prices in the future. For example, after cotton prices rose 92%, one manager of a printed T-shirt manufacturer decided to stockpile a huge supply of plain T-shirts in anticipation of additional price increases. While he normally has about 30 boxes of T-shirts in inventory, he purchased 2,500 boxes.

**Source:** Liam Pleven and Matt Wirz, "Companies Stock Up as Commodities Prices Rise," *Wall Street Journal Online* (February 3, 2011).

**What are the potential downsides of stockpiling a huge amount of raw materials? (Go to WileyPLUS for this answer and additional questions.)**

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## DO IT! 2 | Sales, Production, and Direct Materials Budgets

Soriano Company is preparing its master budget for 2020. Relevant data pertaining to its sales, production, and direct materials budgets are as follows.

*Sales.* Sales for the year are expected to total 1,200,000 units. Quarterly sales, as a percentage of total sales, are 20%, 25%, 30%, and 25%, respectively. The sales price is expected to be $50 per unit for the first three quarters and $55 per unit beginning in the fourth quarter. Sales in the first quarter of 2021 are expected to be 10% higher than the budgeted sales for the first quarter of 2020.

*Production.* Management desires to maintain the ending finished goods inventories at 25% of the next quarter's budgeted sales volume.

*Direct materials.* Each unit requires 3 pounds of raw materials at a cost of $5 per pound. Management desires to maintain raw materials inventories at 5% of the next quarter's production requirements. Assume the production requirements for the first quarter of 2021 are 810,000 pounds.

Prepare the sales, production, and direct materials budgets by quarters for 2020.

**ACTION PLAN**

- Know the form and content of the sales budget.
- Prepare the sales budget first, as the basis for the other budgets.
- Determine the units that must be produced to meet anticipated sales.
- Know how to compute the beginning and ending finished goods units.
- Determine the materials required to meet production needs.
- Know how to compute the beginning and ending direct materials units.

### Solution

Soriano Company Sales Budget

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **Soriano Company** | | | | | |
| 2 | **Sales Budget** | | | | | |
| 3 | **For the Year Ending December 31, 2020** | | | | | |
| 4 | | Quarter | | | | |
| 5 | | 1 | 2 | 3 | 4 | Year |
| 6 | Expected unit sales[a] | 240,000 | 300,000 | 360,000 | 300,000 | 1,200,000 |
| 7 | Unit selling price | × $50 | × $50 | × $50 | × $55 | |
| 8 | **Total sales** | **$12,000,000** | **$15,000,000** | **$18,000,000** | **$16,500,000** | **$61,500,000** |
| 9 | | | | | | |
| 10 | [a]Specified quarterly percentage times annual units, e.g., first quarter of .20 × 1,200,000 | | | | | |

Soriano Company Production Budget

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **Soriano Company** | | | | | |
| 2 | **Production Budget** | | | | | |
| 3 | **For the Year Ending December 31, 2020** | | | | | |
| 4 | | Quarter | | | | |
| 5 | | 1 | 2 | 3 | 4 | Year |
| 6 | Expected unit sales | 240,000 | 300,000 | 360,000 | 300,000 | |
| 7 | Add: Desired ending finished goods units[a] | 75,000 | 90,000 | 75,000 | 66,000[b] | |
| 8 | Total required units | 315,000 | 390,000 | 435,000 | 366,000 | |
| 9 | Less: Beginning finished goods units | 60,000[c] | 75,000 | 90,000 | 75,000 | |
| 10 | **Required production units** | **255,000** | **315,000** | **345,000** | **291,000** | **1,206,000** |
| 11 | | | | | | |
| 12 | [a]25% of next quarter's unit sales | | | | | |
| 13 | [b]Estimated first-quarter 2021 sales units: 240,000 + (240,000 × .10) = 264,000: 264,000 × .25 | | | | | |
| 14 | [c]25% of estimated first-quarter 2020 sales units (240,000 × .25) | | | | | |

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Soriano Company Direct Materials Budget

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P18 fx

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | **Soriano Company** | | | | | | | |
| 2 | **Direct Materials Budget** | | | | | | | |
| 3 | **For the Year Ending December 31, 2020** | | | | | | | |
| 4 | | Quarter | | | | | | |
| 5 | | 1 | | 2 | 3 | 4 | | Year |
| 6 | Units to be produced | 255,000 | | 315,000 | 345,000 | 291,000 | | |
| 7 | Direct materials per unit | × 3 | | × 3 | × 3 | × 3 | | |
| 8 | Total pounds needed for production | 765,000 | | 945,000 | 1,035,000 | 873,000 | | |
| 9 | Add: Desired ending direct materials (pounds) | 47,250 | | 51,750 | 43,650 | 40,500[a] | | |
| 10 | Total materials required | 812,250 | | 996,750 | 1,078,650 | 913,500 | | |
| 11 | Less: Beginning direct materials (pounds) | 38,250[b] | | 47,250 | 51,750 | 43,650 | | |
| 12 | Direct materials purchases | 774,000 | | 949,500 | 1,026,900 | 869,850 | | |
| 13 | Cost per pound | × $5 | | × $5 | × $5 | × $5 | | |
| 14 | **Total cost of direct materials purchases** | **$3,870,000** | | **$4,747,500** | **$5,134,500** | **$4,349,250** | | **$18,101,250** |
| 15 | | | | | | | | |
| 16 | [a]Estimated first-quarter 2021 production requirements: 810,000 × .05 = 40,500 | | | | | | | |
| 17 | [b]5% of estimated first-quarter pounds needed for production | | | | | | | |
| 18 | | | | | | | | |

Related exercise material: **BE24.2, BE24.3, BE24.4, DO IT! 24.2, E24.2, E24.3, E24.4, E24.5, E24.6, E24.7, and E24.8.**

# Direct Labor, Manufacturing Overhead, and S&A Expense Budgets

**LEARNING OBJECTIVE 3**

Prepare budgets for direct labor, manufacturing overhead, and selling and administrative expenses, and a budgeted income statement.

As shown in Illustration 24.2, the operating budgets culminate with preparation of the budgeted income statement. Before we can do that, we need to prepare budgets for direct labor, manufacturing overhead, and selling and administrative expenses.

## Direct Labor Budget

Like the direct materials budget, the **direct labor budget** contains the quantity (hours) and cost of direct labor necessary to meet production requirements. The total direct labor cost is derived from the formula shown in **Illustration 24.10**.

| Units to Be Produced | × | Direct Labor Hours per Unit | × | Direct Labor Cost per Hour | = | Total Direct Labor Cost |
|---|---|---|---|---|---|---|

**ILLUSTRATION 24.10**
**Formula for direct labor cost**

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Direct labor hours are determined from the production budget. At Hayes Company, two hours of direct labor are required to produce each unit of finished goods. The anticipated hourly wage rate is $10. **Illustration 24.11** employs the formula in Illustration 24.10 using these data. For example, in the first quarter, 3,100 units are to be produced requiring two hours of labor per unit, for a total of 6,200 hours (3,100 × $2). Each hour of labor costs $10, for a total cost of $62,000 (6,200 × $10).

**ILLUSTRATION 24.11** **Direct labor budget**

Hayes Company Direct Labor Budget

| | A | C | E | G | I | J |
|---|---|---|---|---|---|---|
| 1 | **Hayes Company** | | | | | |
| 2 | **Direct Labor Budget** | | | | | |
| 3 | **For the Year Ending December 31, 2020** | | | | | |
| 4 | | Quarter | | | | |
| 5 | | 1 | 2 | 3 | 4 | Year |
| 6 | Units to be produced (Illustration 24.5) | 3,100 | 3,600 | 4,100 | 4,600 | |
| 7 | Direct labor time (hours) per unit | × 2 | × 2 | × 2 | × 2 | |
| 8 | Total required direct labor hours | 6,200 | 7,200 | 8,200 | 9,200 | |
| 9 | Direct labor cost per hour | × $10 | × $10 | × $10 | × $10 | |
| 10 | **Total direct labor cost** | **$62,000** | **$72,000** | **$82,000** | **$92,000** | **$308,000** |
| 11 | | | | | | |

**HELPFUL HINT**

**An important assumption in Illustration 24.11 is that the company can add to and subtract from its work force as needed so that the $10 per hour labor cost applies to a wide range of possible production activity.**

The direct labor budget is critical in maintaining a labor force that can meet the expected levels of production (see **Helpful Hint**).

## Manufacturing Overhead Budget

The **manufacturing overhead budget** shows the expected manufacturing overhead costs for the budget period. As **Illustration 24.12** shows, **this budget distinguishes between**

**ILLUSTRATION 24.12** **Manufacturing overhead budget**

Hayes Company Manufacturing Overhead Budget

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **Hayes Company** | | | | | |
| 2 | **Manufacturing Overhead Budget** | | | | | |
| 3 | **For the Year Ending December 31, 2020** | | | | | |
| 4 | | Quarter | | | | |
| 5 | | 1 | 2 | 3 | 4 | Year |
| 6 | Direct labor hours (Illustration 24.11) | 6,200 | 7,200 | 8,200 | 9,200 | 30,800 |
| 7 | Variable costs | | | | | |
| 8 | Indirect materials ($1.00/hour) | $ 6,200 | $ 7,200 | $ 8,200 | $ 9,200 | $ 30,800 |
| 9 | Indirect labor ($1.40/hour) | 8,680 | 10,080 | 11,480 | 12,880 | 43,120 |
| 10 | Utilities ($0.40/hour) | 2,480 | 2,880 | 3,280 | 3,680 | 12,320 |
| 11 | Maintenance ($0.20/hour) | 1,240 | 1,440 | 1,640 | 1,840 | 6,160 |
| 12 | Total variable costs | 18,600 | 21,600 | 24,600 | 27,600 | 92,400 |
| 13 | Fixed costs | | | | | |
| 14 | Supervisory salaries | 20,000 | 20,000 | 20,000 | 20,000 | 80,000 |
| 15 | Depreciation | 3,800 | 3,800 | 3,800 | 3,800 | 15,200 |
| 16 | Property taxes and insurance | 9,000 | 9,000 | 9,000 | 9,000 | 36,000 |
| 17 | Maintenance | 5,700 | 5,700 | 5,700 | 5,700 | 22,800 |
| 18 | Total fixed costs | 38,500 | 38,500 | 38,500 | 38,500 | 154,000 |
| 19 | **Total manufacturing overhead** | **$57,100** | **$60,100** | **$63,100** | **$66,100** | **$246,400** |
| 20 | **Manufacturing overhead rate per direct labor hour ($246,400 ÷ 30,800)** | | | | | **$8** |
| 21 | | | | | | |

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**variable and fixed overhead costs**. Hayes Company expects variable costs to fluctuate with production volume on the basis of the following rates per direct labor hour: indirect materials $1.00, indirect labor $1.40, utilities $0.40, and maintenance $0.20. Thus, for the 6,200 direct labor hours to produce 3,100 units, budgeted indirect materials are $6,200 (6,200 × $1), and budgeted indirect labor is $8,680 (6,200 × $1.40). Hayes also recognizes that some maintenance is fixed. The amounts reported for fixed costs are assumed for our example. The accuracy of budgeted overhead cost estimates can be greatly improved by employing activity-based costing (discussed in Appendix H).

At Hayes Company, overhead is applied to production on the basis of direct labor hours. Thus, as Illustration 24.12 shows, the budgeted annual rate is $8 per hour ($246,400 ÷ 30,800).

## Selling and Administrative Expense Budget

Hayes Company combines its operating expenses into one budget, the **selling and administrative expense budget**. This budget projects anticipated selling and administrative expenses for the budget period. This budget (**Illustration 24.13**) also classifies expenses as either variable or fixed. In this case, the variable expense rates per unit of sales are sales commissions $3 and freight-out $1. Variable expenses per quarter are based on the unit sales from the sales budget (see Illustration 24.3). For example, Hayes expects sales in the first quarter to be 3,000 units. Thus, sales commissions expense is $9,000 (3,000 × $3), and freight-out is $3,000 (3,000 × $1). Fixed expenses are based on assumed data.

**ILLUSTRATION 24.13** **Selling and administrative expense budget**

Hayes Company Manufacturing Selling and Administrative Expense Budget

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **Hayes Company** | | | | | |
| 2 | **Selling and Administrative Expense Budget** | | | | | |
| 3 | **For the Year Ending December 31, 2020** | | | | | |
| 4 | | Quarter | | | | |
| 5 | | 1 | 2 | 3 | 4 | Year |
| 6 | Budgeted sales in units (Illustration 24.3) | 3,000 | 3,500 | 4,000 | 4,500 | 15,000 |
| 7 | Variable expenses | | | | | |
| 8 | Sales commissions ($3 per unit) | $ 9,000 | $10,500 | $12,000 | $13,500 | $ 45,000 |
| 9 | Freight-out ($1 per unit) | 3,000 | 3,500 | 4,000 | 4,500 | 15,000 |
| 10 | Total variable expenses | 12,000 | 14,000 | 16,000 | 18,000 | 60,000 |
| 11 | Fixed expenses | | | | | |
| 12 | Advertising | 5,000 | 5,000 | 5,000 | 5,000 | 20,000 |
| 13 | Sales salaries | 15,000 | 15,000 | 15,000 | 15,000 | 60,000 |
| 14 | Office salaries | 7,500 | 7,500 | 7,500 | 7,500 | 30,000 |
| 15 | Depreciation | 1,000 | 1,000 | 1,000 | 1,000 | 4,000 |
| 16 | Property taxes and insurance | 1,500 | 1,500 | 1,500 | 1,500 | 6,000 |
| 17 | Total fixed expenses | 30,000 | 30,000 | 30,000 | 30,000 | 120,000 |
| 18 | Total selling and administrative expenses | $42,000 | $44,000 | $46,000 | $48,000 | $180,000 |
| 19 | | | | | | |

## Budgeted Income Statement

The **budgeted income statement** is the important end-product of the operating budgets. This budget indicates the expected profitability of operations for the budget period. The budgeted income statement provides the basis for evaluating company performance. Budgeted income statements often act as a call to action. For example, a board member at **XM Satellite Radio Holdings** felt that budgeted costs were too high relative to budgeted revenues. When

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management refused to cut its marketing and programming costs, the board member resigned. He felt that without the cuts, the company risked financial crisis.

As you would expect, the budgeted income statement is prepared from the various operating budgets. For example, to find the cost of goods sold, Hayes Company must first determine the total unit cost of producing one Rightride bicycle seat, as shown in **Illustration 24.14**.

**ILLUSTRATION 24.14**
**Computation of total unit cost**

| | Cost of One Rightride | | | |
|---|---|---|---|---|
| **Cost Element** | **Illustration** | **Quantity** | **Unit Cost** | **Total** |
| Direct materials | 24.9 | 2 pounds | $ 4.00 | $ 8.00 |
| Direct labor | 24.11 | 2 hours | $10.00 | 20.00 |
| Manufacturing overhead | 24.12 | 2 hours | $ 8.00 | 16.00 |
| **Total unit cost** | | | | **$44.00** |

Hayes then determines cost of goods sold by multiplying the units sold by the unit cost. Its budgeted cost of goods sold is $660,000 (15,000 × $44). All data for the income statement come from the individual operating budgets except the following: (1) interest expense is expected to be $100, and (2) income taxes are estimated to be $12,000. **Illustration 24.15** shows the budgeted multiple-step income statement.

**ILLUSTRATION 24.15**
**Budgeted multiple-step income statement**

**Hayes Company**
**Budgeted Income Statement**
**For the Year Ending December 31, 2020**

| | |
|---|---|
| Sales (Illustration 24.3) | $900,000 |
| Cost of goods sold (15,000 × $44) | 660,000 |
| Gross profit | 240,000 |
| Selling and administrative expenses (Illustration 24.13) | 180,000 |
| Income from operations | 60,000 |
| Interest expense | 100 |
| Income before income taxes | 59,900 |
| Income tax expense | 12,000 |
| Net income | $ 47,900 |

## DO IT! 3 | Budgeted Income Statement

Soriano Company is preparing its budgeted income statement for 2020. Relevant data pertaining to its sales, production, and direct materials budgets can be found in **DO IT! 2**.

In addition, Soriano budgets 0.5 hours of direct labor per unit, labor costs at $15 per hour, and manufacturing overhead at $25 per direct labor hour. Its budgeted selling and administrative expenses for 2020 are $12,000,000.

(a) Calculate the budgeted total unit cost. (b) Prepare the budgeted multiple-step income statement for 2020. (Ignore income taxes.)

**ACTION PLAN**

- Recall that total unit cost consists of direct materials, direct labor, and manufacturing overhead.
- Recall that direct materials costs are included in the direct materials budget.
- Know the form and content of the income statement.
- Use the total unit sales information from the sales budget to compute annual sales and cost of goods sold.

### Solution

**a.**

| Cost Element | Quantity | Unit Cost | Total |
|---|---|---|---|
| Direct materials | 3.0 pounds | $ 5 | $15.00 |
| Direct labor | 0.5 hours | $15 | 7.50 |
| Manufacturing overhead | 0.5 hours | $25 | 12.50 |
| **Total unit cost** | | | **$35.00** |

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**b.**

**Soriano Company**
**Budgeted Income Statement**
**For the Year Ending December 31, 2020**

| | |
|---|---|
| Sales (1,200,000 units from sales budget) | $61,500,000 |
| Cost of goods sold (1,200,000 × $35.00/unit) | 42,000,000 |
| Gross profit | 19,500,000 |
| Selling and administrative expenses | 12,000,000 |
| Net income | $ 7,500,000 |

Related exercise material: **BE24.8, DO IT! 24.3, E24.11, and E24.13.**

# Cash Budget and Budgeted Balance Sheet

**LEARNING OBJECTIVE 4**

Prepare a cash budget and a budgeted balance sheet.

As shown in Illustration 24.2, the financial budgets consist of the capital expenditure budget, the cash budget, and the budgeted balance sheet. We will discuss the capital expenditure budget in Chapter 27.

## Cash Budget

The **cash budget** shows anticipated cash flows. Because cash is so vital, this budget is often considered to be the most important financial budget. The cash budget contains three sections (cash receipts, cash disbursements, and financing) and the beginning and ending cash balances, as shown in **Illustration 24.16** (see **Helpful Hint**).

Any Company Cash Budget

Home | Insert | Page Layout | Formulas | Data | Review | View

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| | A | B | C |
|---|---|---|---|
| 1 | **Any Company** | | |
| 2 | **Cash Budget** | | |
| 3 | Beginning cash balance | $X,XXX | |
| 4 | Add: Cash receipts (itemized) | X,XXX | |
| 5 | Total available cash | X,XXX | |
| 6 | Less: Cash disbursements (itemized) | X,XXX | |
| 7 | Excess (deficiency) of available cash over cash disbursements | X,XXX | |
| 8 | Financing | X,XXX | |
| 9 | Ending cash balance | $X,XXX | |

**ILLUSTRATION 24.16**
**Basic form of a cash budget**

**HELPFUL HINT**
The cash budget is prepared after the other budgets because the information generated by the other budgets dictates the expected inflows and outflows of cash.

The **cash receipts section** includes expected receipts from the company's principal source(s) of revenue. These are usually cash sales and collections from customers on credit sales. This section also shows anticipated receipts of interest and dividends, and proceeds from planned sales of investments, plant assets, and the company's capital stock.

The **cash disbursements section** shows expected cash payments. Such payments include direct materials, direct labor, manufacturing overhead, and selling and administrative expenses. This section also includes projected payments for income taxes, dividends, investments, and plant assets.

The **financing section** shows expected borrowings and the repayment of the borrowed funds plus interest. Companies need this section when there is a cash deficiency or when the cash balance is below management's minimum required balance.

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Data in the cash budget are prepared in sequence. The ending cash balance of one period becomes the beginning cash balance for the next period. Companies obtain data for preparing the cash budget from other budgets and from information provided by management. In practice, cash budgets are often prepared for the year on a monthly basis.

To minimize detail, we assume that Hayes Company prepares an annual cash budget by quarters. To prepare the cash budget, it is useful to prepare a schedule for collections from customers. This schedule is based on the following assumption.

1. Sales (Illustration 24.3): 60% are collected in the quarter sold and 40% are collected in the following quarter. Accounts receivable of $60,000 at December 31, 2019, are expected to be collected in full in the first quarter of 2020.

The schedule of cash collections from customers in **Illustration 24.17** applies this assumption. For example, in the first quarter, Hayes collects the $60,000 that was outstanding at the beginning of the quarter, as well as an additional $108,000 (.60 × $180,000), which is 60% of the first-quarter sales of $180,000. Total receipts in the first quarter are $168,000 ($60,000 + $108,000). In the second quarter, the company collects the remaining 40% of first-quarter sales of $72,000 (.40 × $180,000) as well as $126,000 (.60 × $210,000), which is 60% of second-quarter sales of $210,000. Second-quarter receipts are $198,000 ($72,000 + $126,000).

**ILLUSTRATION 24.17**
**Collections from customers**

Hayes Company

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**Hayes Company**
**Schedule of Expected Collections from Customers**

| | | Collections by Quarter | | | |
|---|---|---|---|---|---|
| | Sales[a] | 1 | 2 | 3 | 4 |
| Accounts receivable, 12/31/19 | | $ 60,000 | | | |
| First quarter | $180,000 | 108,000[b] | $ 72,000[c] | | |
| Second quarter | 210,000 | | 126,000 | $ 84,000 | |
| Third quarter | 240,000 | | | 144,000 | $ 96,000 |
| Fourth quarter | 270,000 | | | | 162,000 |
| Total collections | | $168,000 | $198,000 | $228,000 | $258,000 |

[a]Per Illustration 24.3; [b]$180,000 × .60; [c]$180,000 × .40

Next, it is useful to prepare a schedule of expected cash payments for direct materials, based on this second assumption:

2. Direct materials (Illustration 24.9): 50% are paid in the quarter purchased and 50% are paid in the following quarter. Accounts payable of $10,600 at December 31, 2019, are expected to be paid in full in the first quarter of 2020.

The schedule of cash payments for direct materials in **Illustration 24.18** applies this second assumption. For example, in the first quarter, Hayes pays the balance of its beginning accounts payable balance of $10,600 as well as pays $12,600, which is 50% of its first-quarter purchases of $25,200. The total payments in the first quarter are $23,200 ($10,600 + $12,600). In the second quarter, it pays $12,600 (.50 × $25,200) for the remaining 50% of its first-quarter purchases as well as $14,600 (.50 × $29,200) for 50% of the second-quarter purchases. Total payments in the second quarter are $27,200 ($12,600 + $14,600).

The preparation of Hayes Company's cash budget is based on the following additional assumptions.

3. The January 1, 2020, cash balance is expected to be $38,000. Hayes wishes to maintain a balance of at least $15,000.
4. Short-term investment securities are expected to be sold for $2,000 cash in the first quarter.
5. Direct labor (Illustration 24.11): 100% is paid in the quarter incurred.
6. Manufacturing overhead (Illustration 24.12) and selling and administrative expenses (Illustration 24.13): All items except depreciation are paid in the quarter incurred.
7. Management plans to purchase a truck in the second quarter for $10,000 cash.

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Hayes Company

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **Hayes Company** | | | | | |
| 2 | **Schedule of Expected Payments for Direct Materials** | | | | | |
| 3 | | | Payments by Quarter | | | |
| 4 | | Purchases[a] | 1 | 2 | 3 | 4 |
| 5 | Accounts payable, 12/31/19 | | $10,600 | | | |
| 6 | First quarter | $25,200 | 12,600[b] | $12,600[c] | | |
| 7 | Second quarter | 29,200 | | 14,600 | $14,600 | |
| 8 | Third quarter | 33,200 | | | 16,600 | $16,600 |
| 9 | Fourth quarter | 37,200 | | | | 18,600 |
| 10 | Total payments | | $23,200 | $27,200 | $31,200 | $35,200 |
| 11 | | | | | | |
| 12 | [a]Per Illustration 24.9; [b]$25,200 × .50; [c]$25,200 × .50 | | | | | |
| 13 | | | | | | |

**ILLUSTRATION 24.18** Payments for direct materials

8. Hayes makes equal quarterly payments of its estimated $12,000 annual income taxes.
9. Loans are repaid in the earliest quarter in which there is sufficient cash (that is, when the cash on hand exceeds the $15,000 minimum required balance).

**Illustration 24.19** shows the cash budget for Hayes Company. The budget indicates that Hayes will need $3,000 of financing in the second quarter to maintain a minimum cash

**ILLUSTRATION 24.19** Cash budget

Hayes Company Cash Budget

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **Hayes Company** | | | | | | | | | |
| 2 | **Cash Budget** | | | | | | | | | |
| 3 | **For the Year Ending December 31, 2020** | | | | | | | | | |
| 4 | | | Quarter | | | | | | | |
| 5 | | Assumption | 1 | | 2 | | 3 | | 4 | |
| 6 | Beginning cash balance | 3 | $ 38,000 | | $ 25,500 | | $ 15,000 | | $ 19,400 | |
| 7 | **Add: Receipts** | | | | | | | | | |
| 8 | Collections from customers | 1 | 168,000 | | 198,000 | | 228,000 | | 258,000 | |
| 9 | Sale of investment securities | 4 | 2,000 | | 0 | | 0 | | 0 | |
| 10 | Total receipts | | 170,000 | | 198,000 | | 228,000 | | 258,000 | |
| 11 | Total available cash | | 208,000 | | 223,500 | | 243,000 | | 277,400 | |
| 12 | **Less: Disbursements** | | | | | | | | | |
| 13 | Direct materials | 2 | 23,200 | | 27,200 | | 31,200 | | 35,200 | |
| 14 | Direct labor | 5 | 62,000 | | 72,000 | | 82,000 | | 92,000 | |
| 15 | Manufacturing overhead | 6 | 53,300[a] | | 56,300 | | 59,300 | | 62,300 | |
| 16 | Selling and administrative expenses | 6 | 41,000[b] | | 43,000 | | 45,000 | | 47,000 | |
| 17 | Purchase of truck | 7 | 0 | | 10,000 | | 0 | | 0 | |
| 18 | Income tax expense | 8 | 3,000 | | 3,000 | | 3,000 | | 3,000 | |
| 19 | Total disbursements | | 182,500 | | 211,500 | | 220,500 | | 239,500 | |
| 20 | Excess (deficiency) of available cash over cash disbursements | | 25,500 | | 12,000 | | 22,500 | | 37,900 | |
| 21 | **Financing** | | | | | | | | | |
| 22 | Add: Borrowings | | 0 | | 3,000 | | 0 | | 0 | |
| 23 | Less: Repayments including interest | 9 | 0 | | 0 | | 3,100 | | 0 | |
| 24 | Ending cash balance | 3 | $ 25,500 | | $ 15,000 | | $ 19,400 | | $ 37,900 | |
| 25 | | | | | | | | | | |
| 26 | [a]$57,100 − $3,800 depreciation | | | | | | | | | |
| 27 | [b]$42,000 − $1,000 depreciation | | | | | | | | | |

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balance of $15,000. Since there is an excess of available cash over disbursements of $22,500 at the end of the third quarter, the borrowing, plus $100 interest, is repaid in this quarter.

**A cash budget contributes to more effective cash management.** It shows managers when additional financing is necessary well before the actual need arises. And, it indicates when excess cash is available for investments or other purposes.

## Management Insight Kraft Heinz

Violka08/iStock/Getty Images

### Starting from Scratch

Recently an increasing number of companies, including the giant food company **Kraft Heinz**, have adopted "zero-based budgeting." This budgeting approach requires that the budgeting process starts from scratch, rather than using the previous year's budget as a starting point. Every proposed cost must be justified and not just the large expenses. For example, **Pilgrim Pride Corp.**, "scrutinized how much paper it used to print documents, how much soap employees used to wash their hands, and how much Gatorade hourly employees at one processing facility drank during breaks." The move toward zero-based budgeting is due in part to pressure by shareholders to increase company performance, as well as management fear that if a company's operations aren't lean, it will be taken over by outside investors. Proponents point toward zero-based budgeting's ability to reduce wasteful spending practices such as first-class plane flights. But critics suggest that it often results in significant layoffs, destroys employee morale, and potentially reduces a company's ability to pursue growth opportunities. **Coca-Cola** recently implemented zero-based budgeting but calls it "zero-based work" to try to disassociate its efforts from some of the negative connotations associated with zero-based budgeting.

**Source:** David Kesmodel and Annie Gasparro, "Kraft-Heinz Deal Shows Brazilian Buyout Firm's Cost-Cutting Recipe," *Wall Street Journal* (March 2015).

**What are some of the pros and cons of zero-based budgeting? (Go to WileyPLUS for this answer and additional questions.)**

# Budgeted Balance Sheet

The **budgeted balance sheet** is a projection of financial position at the end of the budget period. This budget is developed from the budgeted balance sheet for the preceding year and the budgets for the current year. Pertinent data from the budgeted balance sheet at December 31, 2019, are as follows.

| | | | |
|---|---|---|---|
| Buildings and equipment | $182,000 | Common stock | $225,000 |
| Accumulated depreciation | $ 28,800 | Retained earnings | $ 46,480 |

**Illustration 24.20** shows Hayes Company's budgeted classified balance sheet at December 31, 2020.

**ILLUSTRATION 24.20**
**Budgeted classified balance sheet**

**Hayes Company**
**Budgeted Balance Sheet**
**December 31, 2020**

| | | |
|---|---|---|
| **Assets** | | |
| Current assets | | |
| Cash | | $ 37,900 |
| Accounts receivable | | 108,000 |
| Finished goods inventory | | 44,000 |
| Raw materials inventory | | 4,080 |
| Total current assets | | 193,980 |
| Property, plant, and equipment | | |
| Buildings and equipment | $192,000 | |
| Less: Accumulated depreciation | 48,000 | 144,000 |
| Total assets | | $337,980 |

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ILLUSTRATION 24.20 (*continued*)

| Liabilities and Stockholders' Equity | | |
|---|---|---|
| Liabilities | | |
| Accounts payable | | $ 18,600 |
| Stockholders' equity | | |
| Common stock | $225,000 | |
| Retained earnings | 94,380 | |
| Total stockholders' equity | | 319,380 |
| Total liabilities and stockholders' equity | | $337,980 |

The computations and sources of the amounts are explained below.

**Cash:** Ending cash balance $37,900, shown in the cash budget (Illustration 24.19).

**Accounts receivable:** 40% of fourth-quarter sales $270,000, shown in the schedule of expected collections from customers (Illustration 24.17).

**Finished goods inventory:** Desired ending inventory 1,000 units, shown in the production budget (Illustration 24.5) times the total unit cost $44 (shown in Illustration 24.14).

**Raw materials inventory:** Desired ending inventory 1,020 pounds, times the cost per pound $4, shown in the direct materials budget (Illustration 24.9).

**Buildings and equipment:** December 31, 2019, balance $182,000, plus purchase of truck for $10,000 (Illustration 24.19).

**Accumulated depreciation:** December 31, 2019, balance $28,800, plus $15,200 depreciation shown in manufacturing overhead budget (Illustration 24.12) and $4,000 depreciation shown in selling and administrative expense budget (Illustration 24.13).

**Accounts payable:** 50% of fourth-quarter purchases $37,200, shown in schedule of expected payments for direct materials (Illustration 24.18).

**Common stock:** Unchanged from the beginning of the year.

**Retained earnings:** December 31, 2019, balance $46,480, plus net income $47,900, shown in budgeted income statement (Illustration 24.15).

After budget data are entered into the computer, Hayes prepares the various budgets (sales, cash, etc.), as well as the budgeted financial statements. Using spreadsheets, management can also perform "what if" (sensitivity) analyses based on different hypothetical assumptions. For example, suppose that sales managers project that sales will be 10% higher in the coming quarter. What impact does this change have on the rest of the budgeting process and the financing needs of the business? The impact of the various assumptions on the budget is quickly determined by the spreadsheet. Armed with these analyses, managers make more informed decisions about the impact of various projects. They also anticipate future problems and business opportunities. As seen in this chapter, budgeting is an excellent use of computer spreadsheets.

## DO IT! 4 | Cash Budget

Martian Company management wants to maintain a minimum monthly cash balance of $15,000. At the beginning of March, the cash balance is $16,500, expected cash receipts for March are $210,000, and cash disbursements are expected to be $220,000. How much cash, if any, must be borrowed to maintain the desired minimum monthly balance?

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**Solution**

Martian Company Cash Budget

| | A | B | C |
|---|---|---|---|
| 1 | **Martian Company** | | |
| 2 | **Cash Budget** | | |
| 3 | **For the Month Ending March 31, 2020** | | |
| 4 | Beginning cash balance | $ 16,500 | |
| 5 | Add: Cash receipts for March | 210,000 | |
| 6 | Total available cash | 226,500 | |
| 7 | Less: Cash disbursements for March | 220,000 | |
| 8 | Excess (deficiency) of available cash over cash disbursements | 6,500 | |
| 9 | Financing | 8,500 | |
| 10 | Ending cash balance | $ 15,000 | |
| 11 | | | |

To maintain the desired minimum cash balance of $15,000, Martian Company must borrow $8,500 of cash.

Related exercise material: **BE24.9, DO IT! 24.4, E24.14, E24.15, and E24.16.**

**ACTION PLAN**

- Write down the basic form of the cash budget, starting with the beginning cash balance, adding cash receipts for the period, deducting cash disbursements, and identifying the needed financing to achieve the desired minimum ending cash balance.
- Insert the data given into the outlined form of the cash budget.

# Budgeting in Nonmanufacturing Companies

**LEARNING OBJECTIVE 5**

Apply budgeting principles to nonmanufacturing companies.

Budgeting is not limited to manufacturers. Budgets are also used by merchandisers, service companies, and not-for-profit organizations.

## Merchandisers

As in manufacturing operations, the sales budget for a merchandiser is both the starting point and the key factor in the development of the master budget. The major differences between the master budgets of a merchandiser and a manufacturer are as follows.

1. A merchandiser **uses a merchandise purchases budget instead of a production budget**.
2. A merchandiser **does not use the manufacturing budgets (direct materials, direct labor, and manufacturing overhead)**.

The **merchandise purchases budget** shows the estimated cost of goods to be purchased to meet expected sales. The formula for determining budgeted merchandise purchases is as shown in **Illustration 24.21**.

**ILLUSTRATION 24.21**
**Merchandise purchases formula**

| Budgeted Cost of Goods Sold | + | Desired Ending Merchandise Inventory | − | Beginning Merchandise Inventory | = | Required Merchandise Purchases |
|---|---|---|---|---|---|---|

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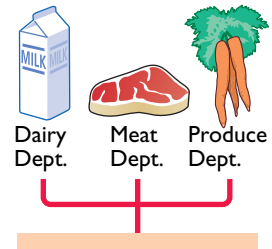
To illustrate, assume that the budget committee of Lima Company is preparing the merchandise purchases budget for July 2020. It estimates that budgeted sales will be $300,000 in July and $320,000 in August. Cost of goods sold is expected to be 70% of sales—that is, $210,000 in July (.70 × $300,000) and $224,000 in August (.70 × $320,000). The company's desired ending inventory is 30% of the following month's cost of goods sold. Required merchandise purchases for July are $214,200, computed as shown in **Illustration 24.22**.

Lima Company Merchandise Purchases Budget

| | A | B | C |
|---|---|---|---|
| 1 | **Lima Company** | | |
| 2 | **Merchandise Purchases Budget** | | |
| 3 | **For the Month Ending July 31, 2020** | | |
| 4 | Budgeted cost of goods sold ($300,000 × .70) | $210,000 | |
| 5 | Add: Desired ending merchandise inventory ($224,000 × .30) | 67,200 | |
| 6 | Total | 277,200 | |
| 7 | Less: Beginning merchandise inventory ($210,000 × .30) | 63,000 | |
| 8 | **Required merchandise purchases for July** | **$214,200** | |

**ILLUSTRATION 24.22**
**Merchandise purchases budget**

When a merchandiser is departmentalized, it prepares separate budgets for each department (see infographic). For example, a grocery store prepares sales budgets and purchases budgets for each of its major departments, such as meats, dairy, and produce. The store then combines these budgets into a master budget for the store. When a retailer has branch stores, it prepares separate master budgets for each store. Then, it incorporates these budgets into master budgets for the company as a whole.




**Departmentalized budgets**

## Service Companies

In a service company, such as a public accounting firm, a law office, or a medical practice, the critical factor in budgeting is **coordinating professional staff needs with anticipated services**. If a firm is overstaffed, several problems may result: Labor costs are disproportionately high. Profits are lower because of the additional salaries. Staff turnover sometimes increases because of lack of challenging work. In contrast, if a service company is understaffed, it may lose revenue because existing and prospective client needs for service cannot be met. Also, professional staff may seek other jobs because of excessive work loads.

Suppose that Stephan Lawn and Plowing Service estimates that it will service 300 small lawns, 200 medium lawns, and 100 large lawns during the month of July. It estimates its direct labor needs as 1 hour per small lawn, 1.75 hours for a medium lawn, and 2.75 hours for a large lawn. Its average cost for direct labor is $15 per hour. Stephan prepares a direct labor budget as shown in **Illustration 24.23**.

Stephan Lawn and Plowing Service Direct Labor Budget

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | **Stephan Lawn and Plowing Service** | | | | |
| 2 | **Direct Labor Budget** | | | | |
| 3 | **For the Month Ending July 31, 2020** | | | | |
| 4 | | Small | Medium | Large | Total |
| 5 | Lawns to be serviced | 300 | 200 | 100 | |
| 6 | Direct labor time (hours) per lawn | × 1 | × 1.75 | × 2.75 | |
| 7 | Total required direct labor hours | 300 | 350 | 275 | |
| 8 | Direct labor cost per hour | × $15 | × $15 | × $15 | |
| 9 | **Total direct labor cost** | **$4,500** | **$5,250** | **$4,125** | **$13,875** |

**ILLUSTRATION 24.23**
**Direct labor budget for service company**

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Service companies can obtain budget data for service revenue from **expected output** or **expected input**. When output is used, it is necessary to determine the expected billings of clients for services performed. In a public accounting firm, for example, output is the sum of its billings in auditing, tax, and consulting services. When input data are used, each professional staff member projects his or her billable time. The firm then applies billing rates to billable time to produce expected service revenue.

## Not-for-Profit Organizations

Budgeting is just as important for not-for-profit organizations as for profit-oriented businesses. The budget process, however, is different. In most cases, not-for-profit entities budget **on the basis of cash flows (expenditures and receipts), rather than on a revenue and expense basis**. Further, the starting point in the process is usually expenditures, not receipts. For the not-for-profit entity, management's task generally is to find the receipts needed to support the planned expenditures. The activity index is also likely to be significantly different. For example, in a not-for-profit entity, such as a university, budgeted faculty positions may be based on full-time equivalent students or credit hours expected to be taught in a department.

For some governmental units, voters approve the budget. In other cases, such as state governments and the federal government, legislative approval is required. After the budget is adopted, it must be followed. Overspending is often illegal. In governmental budgets, authorizations tend to be on a line-by-line basis. That is, the budget for a municipality may have a specified authorization for police and fire protection, garbage collection, street paving, and so on. The line-item authorization of governmental budgets significantly limits the amount of discretion management can exercise. The city manager often cannot use savings from one line item, such as street paving, to cover increased spending in another line item, such as snow removal.

### Service Company Insight Museum of Contemporary Art

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#### Budget Shortfalls as Far as the Eye Can See

All organizations need to stick to budgets. The **Museum of Contemporary Art** in Los Angeles learned this the hard way. Over a 10-year period, its endowment shrunk from $50 million to $6 million as its newly hired director strove to build the museum's reputation through spending. The director consistently ran budget deficits, which eventually threatened the museum's survival.

The most recent recession created budgeting challenges for nearly all governmental agencies. Tax revenues dropped rapidly as earnings declined and unemployment skyrocketed. At the same time, sources of debt financing dried up. Even **Princeton University**, with the largest endowment per student of any U.S. university ($2 million per student), experienced a 25% drop in the value of its endowment when the financial markets plunged. Because the endowment supports 45% of the university's $1.25 billion budget, when the endowment fell the university had to make cuts. Many raises were capped at $2,000, administrative budgets were cut by 5%, and major construction projects were put on hold.

**Sources:** Edward Wyatt and Jori Finkel, "Soaring in Art, Museum Trips Over Finances," *Wall Street Journal Online* (December 4, 2008); Stu Woo, "California's Plans to Close Gap Become More Drastic," *Wall Street Journal Online* (January 8, 2009); and John Hechinger, "Princeton Cuts Budget as Endowment Slides," *Wall Street Journal Online* (January 9, 2009).

**Why would a university's budgeted scholarships probably fall when the stock market suffers a serious drop? (Go to WileyPLUS for this answer and additional questions.)**

### DO IT! 5 | Merchandise Purchases Budget

Becker Company estimates that 2020 sales will be $15,000 in quarter 1, $20,000 in quarter 2, and $25,000 in quarter 3. Cost of goods sold is 80% of sales. Management desires to have ending finished goods inventory equal to 15% of the next quarter's expected cost of goods sold. Prepare a merchandise purchases budget by quarter for the first six months of 2020.

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**Solution**

Becker Company Merchandise Purchases Budget

| | A | B | C | D |
|---|---|---|---|---|
| 1 | **Becker Company** | | | |
| 2 | **Merchandise Purchases Budget** | | | |
| 3 | **For the Six Months Ending June 30, 2020** | | | |
| 4 | | Quarter | | |
| 5 | | 1 | 2 | Six Months |
| 6 | Budgeted cost of goods sold (sales × .80) | $12,000 | $16,000 | |
| 7 | Add: Desired ending merchandise inventory (15% of next quarter's cost of goods sold) | 2,400 | 3,000 | |
| 8 | Total | 14,400 | 19,000 | |
| 9 | Less: Beginning merchandise inventory (15% this quarter's cost of goods sold) | 1,800 | 2,400 | |
| 10 | Required merchandise purchases | $12,600 | $16,600 | $29,200 |

**ACTION PLAN**

- Begin with budgeted cost of goods sold.
- Add desired ending merchandise inventory.
- Subtract beginning merchandise inventory.

Related exercise material: **BE24.10, DO IT! 24.5, E24.19, E24.20, and E24.21.**

# Review and Practice

## Learning Objectives Review

**1 State the essentials of effective budgeting and the components of the master budget.**

The primary benefits of budgeting are that it (a) requires management to plan ahead, (b) provides definite objectives for evaluating performance, (c) creates an early warning system for potential problems, (d) facilitates coordination of activities, (e) results in greater management awareness, and (f) motivates personnel to meet planned objectives. The essentials of effective budgeting are (a) sound organizational structure, (b) research and analysis, and (c) acceptance by all levels of management.

The master budget consists of the following budgets: (a) sales, (b) production, (c) direct materials, (d) direct labor, (e) manufacturing overhead, (f) selling and administrative expense, (g) budgeted income statement, (h) capital expenditure budget, (i) cash budget, and (j) budgeted balance sheet.

**2 Prepare budgets for sales, production, and direct materials.**

The sales budget is derived from sales forecasts. The production budget starts with budgeted sales units, adds desired ending finished goods inventory, and subtracts beginning finished goods inventory to arrive at the required number of units to be produced. The direct materials budget starts with the direct materials units (e.g., pounds) required for budgeted production, adds desired ending direct materials units, and subtracts beginning direct materials units to arrive at required direct materials units to be purchased. This amount is multiplied by the direct materials cost (e.g., cost per pound) to arrive at the total cost of direct materials purchases.

**3 Prepare budgets for direct labor, manufacturing overhead, and selling and administrative expenses, and a budgeted income statement.**

The direct labor budget starts with the units to be produced as determined in the production budget. This amount is multiplied by the direct labor hours per unit and the direct labor cost per hour to arrive at the total direct labor cost. The manufacturing overhead budget lists all of the individual types of overhead costs, distinguishing between fixed and variable costs. The selling and administrative expense budget lists all of the individual types of selling and administrative expense items, distinguishing between fixed and variable costs. The budgeted income statement is prepared from the various operating budgets. Cost of goods sold is determined by calculating the budgeted cost to produce one unit, then multiplying this amount by the number of units sold.

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**4 Prepare a cash budget and a budgeted balance sheet.**

The cash budget has three sections (receipts, disbursements, and financing) and the beginning and ending cash balances. Receipts and payments sections are determined after preparing separate schedules for collections from customers and payments to suppliers. The budgeted balance sheet is developed from the budgeted balance sheet from the preceding year and the various budgets for the current year.

**5 Apply budgeting principles to nonmanufacturing companies.**

Budgeting may be used by merchandisers for development of a merchandise purchases budget. In service companies, budgeting is a critical factor in coordinating staff needs with anticipated services. In not-for-profit organizations, the starting point in budgeting is usually expenditures, not receipts.

## Glossary Review

**Budget** A formal written statement of management's plans for a specified future time period, expressed in financial terms. (p. 24-3).

**Budgetary slack** The amount by which a manager intentionally underestimates budgeted revenues or overestimates budgeted expenses in order to make it easier to achieve budgetary goals. (p. 24-6).

**Budget committee** A group responsible for coordinating the preparation of the budget. (p. 24-4).

**Budgeted balance sheet** A projection of financial position at the end of the budget period. (p. 24-20).

**Budgeted income statement** An estimate of the expected profitability of operations for the budget period. (p. 24-15).

**Cash budget** A projection of anticipated cash flows. (p. 24-17).

**Direct labor budget** A projection of the quantity and cost of direct labor necessary to meet production requirements. (p. 24-13).

**Direct materials budget** An estimate of the quantity and cost of direct materials to be purchased. (p. 24-10).

**Financial budgets** Individual budgets that focus primarily on the cash resources needed to fund expected operations and planned capital expenditures. (p. 24-6).

**Long-range planning** A formalized process of identifying long-term goals, selecting strategies to achieve those goals, and developing policies and plans to implement the strategies. (p. 24-6).

**Manufacturing overhead budget** An estimate of expected manufacturing overhead costs for the budget period. (p. 24-14).

**Master budget** A set of interrelated budgets that constitutes a plan of action for a specific time period. (p. 24-6).

**Merchandise purchases budget** The estimated cost of goods to be purchased by a merchandiser to meet expected sales. (p. 24-22).

**Operating budgets** Individual budgets that result in a budgeted income statement. (p. 24-6).

**Participative budgeting** A budgetary approach that starts with input from lower-level managers and works upward so that managers at all levels participate. (p. 24-5).

**Production budget** A projection of the units that must be produced to meet anticipated sales. (p. 24-9).

**Sales budget** An estimate of expected sales revenue for the budget period. (p. 24-8).

**Sales forecast** The projection of potential sales for the industry and the company's expected share of such sales. (p. 24-4).

**Selling and administrative expense budget** A projection of anticipated selling and administrative expenses for the budget period. (p. 24-15).

## Practice Multiple-Choice Questions

1. **(LO 1)** Which of the following is **not** a benefit of budgeting?
   - **a.** Management can plan ahead.
   - **b.** An early warning system is provided for potential problems.
   - **c.** It enables disciplinary action to be taken at every level of responsibility.
   - **d.** The coordination of activities is facilitated.
2. **(LO 1)** A budget:
   - **a.** is the responsibility of management accountants.
   - **b.** is the primary method of communicating agreed-upon objectives throughout an organization.
   - **c.** ignores past performance because it represents management's plans for a future time period.
   - **d.** may promote efficiency but has no role in evaluating performance.
3. **(LO 1)** The essentials of effective budgeting do **not** include:
   - **a.** top-down budgeting.
   - **b.** management acceptance.
   - **c.** research and analysis.
   - **d.** sound organizational structure.
4. **(LO 1)** Compared to budgeting, long-range planning generally has the:
   - **a.** same amount of detail.
   - **b.** longer time period.
   - **c.** same emphasis.
   - **d.** same time period.
5. **(LO 2)** A sales budget is:
   - **a.** derived from the production budget.
   - **b.** management's best estimate of sales revenue for the year.
   - **c.** not the starting point for the master budget.
   - **d.** prepared only for credit sales.

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**6.** **(LO 2)** The formula for the production budget is budgeted sales in units plus:

**a.** desired ending merchandise inventory less beginning merchandise inventory.

**b.** beginning finished goods units less desired ending finished goods units.

**c.** desired ending direct materials units less beginning direct materials units.

**d.** desired ending finished goods units less beginning finished goods units.

**7.** **(LO 2)** Direct materials inventories are kept in pounds in Byrd Company, and the total pounds of direct materials needed for production is 9,500. If the beginning inventory is 1,000 pounds and the desired ending inventory is 2,200 pounds, the total pounds to be purchased is:

**a.** 9,400. **c.** 9,700.

**b.** 9,500. **d.** 10,700.

**8.** **(LO 3)** The formula for computing the direct labor budget is to multiply the direct labor cost per hour by the:

**a.** total required direct labor hours.

**b.** physical units to be produced.

**c.** equivalent units to be produced.

**d.** No correct answer is given.

**9.** **(LO 3)** Each of the following budgets is used in preparing the budgeted income statement **except** the:

**a.** sales budget.

**b.** selling and administrative expense budget.

**c.** capital expenditure budget.

**d.** direct labor budget.

**10.** **(LO 3)** The budgeted income statement is:

**a.** the end-product of the operating budgets.

**b.** the end-product of the financial budgets.

**c.** the starting point of the master budget.

**d.** dependent on cash receipts and cash disbursements.

**11.** **(LO 4)** The budgeted balance sheet is:

**a.** developed from the budgeted balance sheet for the preceding year and the budgets for the current year.

**b.** the last operating budget prepared.

**c.** used to prepare the cash budget.

**d.** All of the above.

**12.** **(LO 4)** The format of a cash budget is:

**a.** Beginning cash balance + Cash receipts + Cash from financing − Cash disbursements = Ending cash balance.

**b.** Beginning cash balance + Cash receipts − Cash disbursements +/− Financing = Ending cash balance.

**c.** Beginning cash balance + Net income − Cash dividends = Ending cash balance.

**d.** Beginning cash balance + Cash revenues − Cash expenses = Ending cash balance.

**13.** **(LO 4)** Expected direct materials purchases in Read Company are $70,000 in the first quarter and $90,000 in the second quarter. Forty percent of the purchases are paid in cash as incurred, and the balance is paid in the following quarter. The budgeted cash payments for purchases in the second quarter are:

**a.** $96,000. **c.** $78,000.

**b.** $90,000. **d.** $72,000.

**14.** **(LO 5)** The budget for a merchandiser differs from a budget for a manufacturer because:

**a.** a merchandise purchases budget replaces the production budget.

**b.** the manufacturing budgets are not applicable.

**c.** None of the above.

**d.** Both (a) and (b) above.

**15.** **(LO 5)** In most cases, not-for-profit entities:

**a.** prepare budgets using the same steps as those used by profit-oriented businesses.

**b.** know budgeted cash receipts at the beginning of a time period, so they budget only for expenditures.

**c.** begin the budgeting process by budgeting expenditures rather than receipts.

**d.** can ignore budgets because they are not expected to generate net income.

## Solutions

**1.** **c.** Budgeting does not necessarily enable disciplinary action to be taken at every level of responsibility. The other choices are all benefits of budgeting.

**2.** **b.** A budget is the primary method of communicating agreed-upon objectives throughout an organization. The other choices are incorrect because (a) a budget is the responsibility of all levels of management, not management accountants; (c) past performance is not ignored in the budgeting process but instead is the starting point from which future budget goals are formulated; and (d) the budget not only may promote efficiency but is an important tool for evaluating performance.

**3.** **a.** Top-down budgeting is not one of the essentials of effective budgeting. The other choices are true statements.

**4.** **b.** Long-range planning generally encompasses a period of at least 5 years whereas budgeting usually covers a period of 1 year. The other choices are incorrect because budgeting and long-range planning (a) do not have the same amount of detail, (c) do not have the same emphasis, and (d) do not cover the same time period.

**5.** **b.** A sales budget is management's best estimate of sales revenue for the year. The other choices are incorrect because a sales budget (a) is the first budget prepared and is the one budget that is not derived from any other budget, (c) is the starting point for the master budget, and (d) is prepared for both cash and credit sales.

**6.** **d.** The formula for the production budget is budgeted sales in units plus desired ending finished goods units less beginning finished goods units. The other choices are therefore incorrect.

**7.** **d.** Pounds to be purchased = Amount needed for production (9,500) + Desired ending inventory (2,200) − Beginning inventory (1,000) = 10,700, not (a) 9,400, (b) 9,500, or (c) 9,700.

**8.** **a.** Direct labor cost = Direct labor cost per hour × Total required direct labor hours. The other choices are therefore incorrect.

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**9. c.** The capital expenditure budget is not used in preparing the budgeted income statement. The other choices are true statements.

**10. a.** The budgeted income statement is the end-product of the operating budgets, not (b) the financial budgets, (c) the starting point of the master budget, or (d) dependent on cash receipts and cash disbursements.

**11. a.** The budgeted balance sheet is developed from the budgeted balance sheet for the preceding year and the budgets for the current year. The other choices are therefore incorrect.

**12. b.** The format of a cash budget is Beginning cash balance + Cash receipts − Cash disbursements +/− Financing = Ending cash balance. The other choices are therefore incorrect.

**13. c.** Budgeted cash payments for the second quarter = Purchases for the first quarter ($42,000; $70,000 × .60) + 40% of the purchases for the second quarter ($36,000; $90,000 × .40) = $78,000, not (a) $96,000, (b) $90,000, or (d) $72,000.

**14. d.** The budget for a merchandiser uses a merchandise purchases budget in place of a production budget, and the manufacturing budgets are not applicable for a merchandiser. Therefore, as both choices (a) and (b) are correct, choice (d) is the best answer.

**15. c.** In most cases, not-for-profit entities begin the budgeting process by budgeting expenditures rather than receipts. The other choices are incorrect because in most cases not-for-profit entities (a) prepare budgets using different, not the same, steps as those used by profit-oriented enterprises; (b) budget for both expenditures and receipts; and (d) cannot ignore budgets.

## Practice Brief Exercises

*Prepare a production budget for two quarters.*

**1. (LO 2)** Romana Company estimates that unit sales will be 20,000 in quarter 1, 24,000 in quarter 2, 27,000 in quarter 3, and 33,000 in quarter 4. Management desires to have an ending finished goods inventory equal to 20% of the next quarter's expected unit sales. Prepare a production budget by quarters for the first 6 months of 2020.

### Solution

**1.**

**Romana Company**
**Production Budget**
**For the Six Months Ending June 30, 2020**

| | Quarter | | Six Months |
|---|---|---|---|
| | 1 | 2 | |
| Expected unit sales | 20,000 | 24,000 | |
| Add: Desired ending finished goods | 4,800[a] | 5,400[c] | |
| Total required units | 24,800 | 29,400 | |
| Less: Beginning finished goods inventory | 4,000[b] | 4,800 | |
| Required production units | 20,800 | 24,600 | 45,400 |

[a]24,000 × .2 [b]20,000 × .2 [c]27,000 × .2

*Prepare a direct labor budget for 2 quarters.*

**2. (LO 3)** For Jovanka Company, units to be produced are 7,000 in quarter 1 and 9,800 in quarter 2. It takes 2.2 hours to make a finished unit, and the expected hourly wage rate is $20 per hour. Prepare a direct labor budget by quarters for the 6 months ending June 30, 2020.

### Solution

**2.**

**Jovanka Company**
**Direct Labor Budget**
**For the Six Months Ending June 30, 2020**

| | Quarter | | Six Months |
|---|---|---|---|
| | 1 | 2 | |
| Units to be produced | 7,000 | 9,800 | |
| Direct labor time (hours) per unit | × 2.2 | × 2.2 | |
| Total required direct labor hours | 15,400 | 21,560 | |
| Direct labor cost per hour | × $20 | × $20 | |
| Total direct labor cost | $308,000 | $431,200 | $739,200 |

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**3. (LO 4)** Vislor Industries expects credit sales for January, February, and March to be $165,000, $200,000, and $220,000, respectively. It is expected that 70% of the sales will be collected in the month of sale, and 30% will be collected in the following month. Compute cash collections from customers for each month.

*Prepare data for a cash budget.*

### Solution

**3.**

| | Collections from Customers | | |
|---|---|---|---|
| **Credit Sales** | **January** | **February** | **March** |
| January, $165,000 | $115,500 | $ 49,500 | |
| February, $200,000 | | 140,000 | $ 60,000 |
| March, $220,000 | | | 154,000 |
| | $115,500 | $189,500 | $214,000 |

**4. (LO 5)** Turlough Wholesalers is preparing its merchandise purchases budget. Budgeted sales are $300,000 for June and $380,000 for July. Cost of goods sold is expected to be 60% of sales. The company's desired ending inventory is 25% of the following month's cost of goods sold. Compute the required purchases for June.

*Determine required merchandise purchases for 1 month.*

### Solution

**4.**

| | |
|---|---|
| Budgeted cost of goods sold ($300,000 × 60%) | $180,000 |
| Add: Desired ending inventory ($380,000 × 60% × 25%) | 57,000 |
| Total inventory required | 237,000 |
| Less: Beginning inventory ($300,000 × 60% × 25%) | 45,000 |
| Required merchandise purchases for April | $192,000 |

## Practice Exercises

**1. (LO 2)** On January 1, 2020, the Heche Company budget committee has reached agreement on the following data for the 6 months ending June 30, 2020.

*Prepare production and direct materials budgets by quarter for 6 months.*

| | |
|---|---|
| Sales units: | First quarter 5,000; second quarter 6,000; third quarter 7,000 |
| Ending raw materials inventory: | 40% of the next quarter's production requirements |
| Ending finished goods inventory: | 30% of the next quarter's expected sales units |
| Third-quarter 2020 production: | 7,500 units |

The ending raw materials and finished goods inventories at December 31, 2019, follow the same percentage relationships to production and sales that occur in 2020. Two pounds of raw materials are required to make each unit of finished goods. Raw materials purchased are expected to cost $5 per pound.

### Instructions

**a.** Prepare a production budget by quarters for the 6-month period ended June 30, 2020.

**b.** Prepare a direct materials budget by quarters for the 6-month period ended June 30, 2020.

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## Solution

**1. a.**

Heche Company Production Budget

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **Heche Company** | | | | | |
| 2 | **Production Budget** | | | | | |
| 3 | **For the Six Months Ending June 30, 2020** | | | | | |
| 4 | | Quarter | | | | |
| 5 | | 1 | | 2 | | Six Months |
| 6 | Expected unit sales | 5,000 | | 6,000 | | |
| 7 | Add: Desired ending finished goods units | 1,800 (1) | | 2,100 (2) | | |
| 8 | Total required units | 6,800 | | 8,100 | | |
| 9 | Less: Beginning finished goods units | 1,500 (3) | | 1,800 | | |
| 10 | **Required production units** | **5,300** | | **6,300** | | **11,600** |
| 11 | | | | | | |
| 12 | (1).30 × 6,000; (2).30 × 7,000; (3).30 × 5,000 | | | | | |

**b.**

Heche Company Direct Materials Budget

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **Heche Company** | | | | | |
| 2 | **Direct Materials Budget** | | | | | |
| 3 | **For the Six Months Ending June 30, 2020** | | | | | |
| 4 | | Quarter | | | | |
| 5 | | 1 | | 2 | | Six Months |
| 6 | Units to be produced | 5,300 | | 6,300 | | |
| 7 | Direct materials per unit | × 2 | | × 2 | | |
| 8 | Total pounds needed for production | 10,600 | | 12,600 | | |
| 9 | Add: Desired ending direct materials (pounds) | 5,040 (1) | | 6,000 (2) | | |
| 10 | Total materials required | 15,640 | | 18,600 | | |
| 11 | Less: Beginning direct materials (pounds) | 4,240 (3) | | 5,040 | | |
| 12 | Direct materials purchase | 11,400 | | 13,560 | | |
| 13 | Cost per pound | × $5 | | × $5 | | |
| 14 | **Total cost of direct materials purchase** | **$57,000** | | **$67,800** | | **$124,800** |
| 15 | | | | | | |
| 16 | (1).40 × 12,600; (2)7,500 × (2 × .40); (3).40 × 10,600 | | | | | |
| 17 | | | | | | |

*Prepare a cash budget for 2 months.*

**2. (LO 4)** Jake Company expects to have a cash balance of $45,000 on January 1, 2020. Relevant monthly budget data for the first 2 months of 2020 are as follows.

Collections from customers: January $100,000, February $160,000.

Payments for direct materials: January $60,000, February $80,000.

Direct labor: January $30,000, February $45,000. Wages are paid in the month they are incurred.

Manufacturing overhead: January $26,000, February $31,000. These costs include depreciation of $1,000 per month. All other overhead costs are paid as incurred.

Selling and administrative expenses: January $15,000, February $20,000. These costs are exclusive of depreciation. They are paid as incurred.

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Sales of marketable securities in January are expected to realize $10,000 in cash. Jake Company has a line of credit at a local bank that enables it to borrow up to $25,000. The company wants to maintain a minimum monthly cash balance of $25,000.

### Instructions

Prepare a cash budget for January and February.

### Solution

**2.**

Jake Company Cash Budget

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C |
|---|---|---|---|
| 1 | **Jake Company** | | |
| 2 | **Cash Budget** | | |
| 3 | **For the Two Months Ending February 29, 2020** | | |
| 4 | | January | February |
| 5 | Beginning cash balance | $ 45,000 | $ 25,000 |
| 6 | Add: Receipts | | |
| 7 | Collections from customers | 100,000 | 160,000 |
| 8 | Sale of marketable securities | 10,000 | 0 |
| 9 | Total receipts | 110,000 | 160,000 |
| 10 | Total available cash | 155,000 | 185,000 |
| 11 | Less: Disbursements | | |
| 12 | Direct materials | 60,000 | 80,000 |
| 13 | Direct labor | 30,000 | 45,000 |
| 14 | Manufacturing overhead | 25,000* | 30,000 |
| 15 | Selling and administrative expenses | 15,000 | 20,000 |
| 16 | Total disbursements | 130,000 | 175,000 |
| 17 | Excess (deficiency) of available cash over cash | | |
| 18 | Disbursements | 25,000 | 10,000 |
| 19 | Financing | | |
| 20 | Borrowings | 0 | 15,000 |
| 21 | Repayments | 0 | 0 |
| 22 | Ending cash balance | $ 25,000 | $ 25,000 |
| 23 | | | |

*$26,000 – $1,000

## Practice Problems

**1. (LO 2)** Asheville Company is preparing its master budget for 2020. Relevant data pertaining to its sales and production budgets are as follows.

*Prepare sales and production budgets.*

*Sales.* Sales for the year are expected to total 2,100,000 units. Quarterly sales, as a percentage of total sales, are 15%, 25%, 35%, and 25%, respectively. The sales price is expected to be $70 per unit for the first three quarters and $75 per unit beginning in the fourth quarter. Sales in the first quarter of 2021 are expected to be 10% higher than the budgeted sales volume for the first quarter of 2020.

*Production.* Management desires to maintain ending finished goods inventories at 20% of the next quarter's budgeted sales volume.

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**Instructions**

Prepare the sales budget and production budget by quarters for 2020.

**Solution**

**1.**

Asheville Company Sales Budget and Production Budget

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | **Asheville Company** | | | | | | | |
| 2 | **For the Year Ending December 31, 2020** | | | | | | | |
| 3 | **Sales Budget** | | | | | | | |
| 4 | | Quarter | | | | | | |
| 5 | | 1 | | 2 | 3 | 4 | | Year |
| 6 | Expected unit sales[a] | 315,000 | | 525,000 | 735,000 | 525,000 | | 2,100,000 |
| 7 | Unit selling price | × $70 | | × $70 | × $70 | × $75 | | |
| 8 | Total sales | $22,050,000 | | $36,750,000 | $51,450,000 | $39,375,000 | | $149,625,000 |
| 9 | | | | | | | | |
| 10 | **Production Budget** | | | | | | | |
| 11 | Expected unit sales | 315,000 | | 525,000 | 735,000 | 525,000 | | |
| 11 | Add: Desired ending finished goods units | 105,000 | | 147,000 | 105,000 | 69,300[b] | | |
| 12 | Total required units | 420,000 | | 672,000 | 840,000 | 594,300 | | |
| 13 | Less: Beginning finished goods units | 63,000[c] | | 105,000 | 147,000 | 105,000 | | |
| 14 | **Required production units** | **357,000** | | **567,000** | **693,000** | **489,300** | | **2,106,300** |
| 15 | | | | | | | | |
| 16 | [a]Expected first-quarter unit sales 2,100,000 × .15; second and fourth quarters 2,100,000 × .25; | | | | | | | |
| 17 | third quarter 2,100,000 × .35 | | | | | | | |
| 18 | [b]Estimated first-quarter 2021 sales volume 315,000 + (315,000 × .10) = 346,500; 346,500 × .20 | | | | | | | |
| 19 | [c]20% of estimated first-quarter 2020 sales units (315,000 × .20) | | | | | | | |

*Prepare budgeted cost of goods sold, income statement, and balance sheet.*

**2. (LO 3, 4)** Barrett Company has completed all operating budgets other than the income statement for 2020. Selected data from these budgets follow.

Sales: $300,000
Purchases of raw materials: $145,000
Ending inventory of raw materials: $15,000
Direct labor: $40,000
Manufacturing overhead: $73,000, including $3,000 of depreciation expense
Selling and administrative expenses: $36,000 including depreciation expense of $1,000
Interest expense: $1,000
Principal payment on note: $2,000
Dividends declared: $2,000
Income tax rate: 30%

Other information:

Assume that the number of units produced equals the number sold.
Year-end accounts receivable: 4% of 2020 sales.
Year-end accounts payable: 50% of ending inventory of raw materials.
Interest, direct labor, manufacturing overhead, and selling and administrative expenses other than depreciation are paid as incurred.
Dividends declared and income taxes for 2020 will not be paid until 2021.

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**Barrett Company**
**Balance Sheet**
**December 31, 2019**

**Assets**

| | | |
|---|---|---|
| Current assets | | |
| Cash | | $20,000 |
| Raw materials inventory | | 10,000 |
| Total current assets | | 30,000 |
| Property, plant, and equipment | | |
| Equipment | $40,000 | |
| Less: Accumulated depreciation | 4,000 | 36,000 |
| Total assets | | $66,000 |

**Liabilities and Stockholders' Equity**

| | | |
|---|---|---|
| Liabilities | | |
| Accounts payable | $ 5,000 | |
| Notes payable | 22,000 | |
| Total liabilities | | $27,000 |
| Stockholders' equity | | |
| Common stock | 25,000 | |
| Retained earnings | 14,000 | |
| Total stockholders' equity | | 39,000 |
| Total liabilities and stockholders' equity | | $66,000 |

## Instructions

**a.** Calculate budgeted cost of goods sold.

**b.** Prepare a budgeted multiple-step income statement for the year ending December 31, 2020.

**c.** Prepare a budgeted classified balance sheet as of December 31, 2020.

## Solution

**2. a.** Beginning raw materials + Purchases − Ending raw materials = Cost of direct materials used ($10,000 + $145,000 − $15,000 = $140,000)
Direct materials used + Direct labor + Manufacturing overhead = Cost of goods sold ($140,000 + $40,000 + $73,000 = $253,000)

**b.**

**Barrett Company**
**Budgeted Income Statement**
**For the Year Ending December 31, 2020**

| | |
|---|---|
| Sales | $300,000 |
| Cost of goods sold | 253,000 |
| Gross profit | 47,000 |
| Selling and administrative expenses | 36,000 |
| Income from operations | 11,000 |
| Interest expense | 1,000 |
| Income before income tax expense | 10,000 |
| Income tax expense (30%) | 3,000* |
| Net income | $ 7,000 |

*$10,000 * .30

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**c.**

**Barrett Company**
**Budgeted Balance Sheet**
**December 31, 2020**

**Assets**

| | | |
|---|---|---|
| Current assets | | |
| Cash[1] | | $ 17,500 |
| Accounts receivable (.04 × $300,000) | | 12,000 |
| Raw materials inventory | | 15,000 |
| Total current assets | | 44,500 |
| Property, plant and equipment | | |
| Equipment | $ 40,000 | |
| Less: Accumulated depreciation[2] | 8,000 | 32,000 |
| Total assets | | $ 76,500 |

**Liabilities and Stockholders' Equity**

| | | |
|---|---|---|
| Liabilities | | |
| Accounts payable (.50 × $15,000) | $ 7,500 | |
| Income taxes payable (see income statement) | 3,000 | |
| Dividends payable | 2,000 | |
| Note payable ($22,000 – $2,000) | 20,000 | |
| Total liabilities | | $32,500 |
| Stockholders' equity | | |
| Common stock | 25,000 | |
| Retained earnings[3] | 19,000 | |
| Total stockholders' equity | | 44,000 |
| Total liabilities and stockholders' equity | | $76,500 |

| | | |
|---|---|---|
| [1]Beginning cash balance | | $ 20,000 |
| Add: Receipts | | |
| Collections from customers [(1 – .04) × $300,000 sales)] | | 288,000 |
| Total available cash | | 308,000 |
| Less: Disbursements | | |
| Direct materials ($5,000 + $145,000 – $7,500) | $142,500 | |
| Direct labor | 40,000 | |
| Manufacturing overhead ($73,000 – $3,000) | 70,000 | |
| Selling and administrative expenses ($36,000 – $1,000) | 35,000 | |
| Total disbursements | | 287,500 |
| Excess of available cash over cash disbursements | | 20,500 |
| Financing | | |
| Less: Repayment of principal and interest | | 3,000 |
| Ending cash balance | | $ 17,500 |

[2]$4,000 + $3,000 + $1,000

[3]Beginning retained earnings + Net income – Dividends declared = Ending retained earnings
($14,000 + $7,000 – $2,000 = $19,000)

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

## Questions

1. **a.** What is a budget?
   **b.** How does a budget contribute to good management?

2. Kate Cey and Joe Coulter are discussing the benefits of budgeting. They ask you to identify the primary benefits of budgeting. Comply with their request.

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**3.** Jane Gilligan asks your help in understanding the essentials of effective budgeting. Identify the essentials for Jane.

**4.** **a.** "Accounting plays a relatively unimportant role in budgeting." Do you agree? Explain.

**b.** What responsibilities does management have in budgeting?

**5.** What criteria are helpful in determining the length of the budget period? What is the most common budget period?

**6.** Lori Wilkins maintains that the only difference between budgeting and long-range planning is time. Do you agree? Why or why not?

**7.** What is participative budgeting? What are its potential benefits? What are its potential disadvantages?

**8.** What is budgetary slack? What incentive do managers have to create budgetary slack?

**9.** Distinguish between a master budget and a sales forecast.

**10.** What budget is the starting point in preparing the master budget? What may result if this budget is inaccurate?

**11.** "The production budget shows both unit production data and unit cost data." Is this true? Explain.

**12.** Alou Company has 20,000 beginning finished goods units. Budgeted sales units are 160,000. If management desires 15,000 ending finished goods units, what are the required units of production?

**13.** In preparing the direct materials budget for Quan Company, management concludes that required purchases are 64,000 units. If 52,000 direct materials units are required in production and there are 9,000 units of beginning direct materials, what is the desired units of ending direct materials?

**14.** The production budget of Justus Company calls for 80,000 units to be produced. If it takes 45 minutes to make one unit and the direct labor rate is $16 per hour, what is the total budgeted direct labor cost?

**15.** Ortiz Company's manufacturing overhead budget shows total variable costs of $198,000 and total fixed costs of $162,000. Total production in units is expected to be 150,000. It takes 20 minutes to make one unit, and the direct labor rate is $15 per hour. Express the manufacturing overhead rate as (a) a percentage of direct labor cost, and (b) an amount per direct labor hour.

**16.** Everly Company's variable selling and administrative expenses are 12% of net sales. Fixed expenses are $50,000 per quarter. The sales budget shows expected sales of $200,000 and $240,000 in the first and second quarters, respectively. What are the total budgeted selling and administrative expenses for each quarter?

**17.** For Goody Company, the budgeted cost for one unit of product is direct materials $10, direct labor $20, and manufacturing overhead 80% of direct labor cost. If 25,000 units are expected to be sold at $65 each, what is the budgeted gross profit?

**18.** Indicate the supporting schedules used in preparing a budgeted income statement through gross profit for a manufacturer.

**19.** Identify the three sections of a cash budget. What balances are also shown in this budget?

**20.** Noterman Company has credit sales of $600,000 in January. Past experience suggests that 40% is collected in the month of sale, 50% in the month following the sale, and 10% in the second month following the sale. Compute the cash collections from January sales in January, February, and March.

**21.** What is the formula for determining required merchandise purchases for a merchandiser?

**22.** How may expected revenues in a service company be computed?

## Brief Exercises

**BE24.1 (LO 1)** Maris Company uses the following budgets: balance sheet, capital expenditure, cash, direct labor, direct materials, income statement, manufacturing overhead, production, sales, and selling and administrative expense. Prepare a diagram of the interrelationships of the budgets in the master budget. Indicate whether each budget is an operating or a financial budget.

*Prepare a diagram of a master budget.*

**BE24.2 (LO 2)** Paige Company estimates that unit sales will be 10,000 in quarter 1, 14,000 in quarter 2, 15,000 in quarter 3, and 18,000 in quarter 4. Using a sales price of $70 per unit, prepare the sales budget by quarters for the year ending December 31, 2020.

*Prepare a sales budget.*

**BE24.3 (LO 2)** Sales budget data for Paige Company are given in BE24.2. Management desires to have an ending finished goods inventory equal to 25% of the next quarter's expected unit sales. Prepare a production budget by quarters for the first 6 months of 2020.

*Prepare a production budget for 2 quarters.*

**BE24.4 (LO 2)** Perine Company has 2,000 pounds of raw materials in its December 31, 2019, ending inventory. Required production for January and February of 2020 are 4,000 and 5,000 units, respectively. Two pounds of raw materials are needed for each unit, and the estimated cost per pound is $6. Management desires an ending inventory equal to 25% of next month's materials requirements. Prepare the direct materials budget for January.

*Prepare a direct materials budget for 1 month.*

**BE24.5 (LO 3)** For Gundy Company, units to be produced are 5,000 in quarter 1 and 7,000 in quarter 2. It takes 1.6 hours to make a finished unit, and the expected hourly wage rate is $15 per hour. Prepare a direct labor budget by quarters for the 6 months ending June 30, 2020.

*Prepare a direct labor budget for 2 quarters.*

**BE24.6 (LO 3)** For Roche Inc., variable manufacturing overhead costs are expected to be $20,000 in the first quarter of 2020, with $5,000 increments in each of the remaining three quarters. Fixed overhead costs are estimated to be $40,000 in each quarter. Prepare the manufacturing overhead budget by quarters and in total for the year.

*Prepare a manufacturing overhead budget.*

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*Prepare a selling and administrative expense budget.*

**BE24.7 (LO 3)** Elbert Company classifies its selling and administrative expense budget into variable and fixed components. Variable expenses are expected to be $24,000 in the first quarter, and $4,000 increments are expected in the remaining quarters of 2020. Fixed expenses are expected to be $40,000 in each quarter. Prepare the selling and administrative expense budget by quarters and in total for 2020.

*Prepare a budgeted income statement for the year.*

**BE24.8 (LO 3)** North Company has completed all of its operating budgets. The sales budget for the year shows 50,000 units and total sales of $2,250,000. The total unit cost of making one unit of sales is $25. Selling and administrative expenses are expected to be $300,000. Interest is estimated to be $10,000. Income taxes are estimated to be $200,000. Prepare a budgeted multiple-step income statement for the year ending December 31, 2020.

*Prepare data for a cash budget.*

**BE24.9 (LO 4)** Kaspar Industries expects credit sales for January, February, and March to be $220,000, $260,000, and $300,000, respectively. It is expected that 75% of the sales will be collected in the month of sale, and 25% will be collected in the following month. Compute cash collections from customers for each month.

*Determine required merchandise purchases for 1 month.*

**BE24.10 (LO 5)** Moore Wholesalers is preparing its merchandise purchases budget. Budgeted sales are $400,000 for April and $480,000 for May. Cost of goods sold is expected to be 65% of sales. The company's desired ending inventory is 20% of the following month's cost of goods sold. Compute the required purchases for April.

## DO IT! Exercises

*Identify budget terminology.*

**DO IT! 24.1 (LO 1)** Use this list of terms to complete the sentences that follow.

| | |
|---|---|
| Long-range plans | Participative budgeting |
| Sales forecast | Operating budgets |
| Master budget | Financial budgets |

1. _____ establish goals for the company's sales and production personnel.
2. The _____ is a set of interrelated budgets that constitutes a plan of action for a specified time period.
3. _____ reduces the risk of having unrealistic budgets.
4. _____ include the cash budget and the budgeted balance sheet.
5. The budget is formed within the framework of a _____.
6. _____ contain considerably less detail than budgets.

*Prepare sales, production, and direct materials budgets.*

**DO IT! 24.2 (LO 2)** Pargo Company is preparing its master budget for 2020. Relevant data pertaining to its sales, production, and direct materials budgets are as follows.

*Sales*. Sales for the year are expected to total 1,000,000 units. Quarterly sales are 20%, 25%, 25%, and 30%, respectively. The sales price is expected to be $40 per unit for the first three quarters and $45 per unit beginning in the fourth quarter. Sales in the first quarter of 2021 are expected to be 20% higher than the budgeted sales for the first quarter of 2020.

*Production.* Management desires to maintain the ending finished goods inventories at 25% of the next quarter's budgeted sales volume.

*Direct materials.* Each unit requires 2 pounds of raw materials at a cost of $12 per pound. Management desires to maintain raw materials inventories at 10% of the next quarter's production requirements. Assume the production requirements for first quarter of 2021 are 450,000 pounds.

Prepare the sales, production, and direct materials budgets by quarters for 2020.

*Calculate budgeted total unit cost and prepare budgeted income statement.*

**DO IT! 24.3 (LO 3)** Pargo Company is preparing its budgeted income statement for 2020. Relevant data pertaining to its sales, production, and direct materials budgets can be found in **DO IT! 24.2**.

In addition, Pargo budgets 0.3 hours of direct labor per unit, labor costs at $15 per hour, and manufacturing overhead at $20 per direct labor hour. Its budgeted selling and administrative expenses for 2020 are $6,000,000.

**a.** Calculate the budgeted total unit cost.

**b.** Prepare the budgeted multiple-step income statement for 2020. (Ignore income taxes.)

*Determine amount of financing needed.*

**DO IT! 24.4 (LO 4)** Batista Company management wants to maintain a minimum monthly cash balance of $25,000. At the beginning of April, the cash balance is $25,000, expected cash receipts for

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April are $245,000, and cash disbursements are expected to be $255,000. How much cash, if any, must be borrowed to maintain the desired minimum monthly balance?

**DO IT! 24.5 (LO 5)** Zeller Company estimates that 2020 sales will be $40,000 in quarter 1, $48,000 in quarter 2, and $58,000 in quarter 3. Cost of goods sold is 50% of sales. Management desires to have ending finished goods inventory equal to 10% of the next quarter's expected cost of goods sold. Prepare a merchandise purchases budget by quarter for the first 6 months of 2020.

*Prepare merchandise purchases budget.*

## Exercises

**E24.1 (LO 1)** Writing Trusler Company has always done some planning for the future, but the company has never prepared a formal budget. Now that the company is growing larger, it is considering preparing a budget.

*Explain the concept of budgeting.*

### Instructions

Write a memo to Jim Dixon, the president of Trusler Company, in which you define budgeting, identify the budgets that comprise the master budget, identify the primary benefits of budgeting, and discuss the essentials of effective budgeting.

**E24.2 (LO 2)** Edington Electronics Inc. produces and sells two models of calculators, XQ-103 and XQ-104. The calculators sell for $15 and $25, respectively. Because of the intense competition Edington faces, management budgets sales semiannually. Its projections for the first 2 quarters of 2020 are as follows.

*Prepare a sales budget for 2 quarters.*

Excel

| | Unit Sales | |
|---|---|---|
| **Product** | **Quarter 1** | **Quarter 2** |
| XQ-103 | 20,000 | 22,000 |
| XQ-104 | 12,000 | 15,000 |

No changes in selling prices are anticipated.

### Instructions

Prepare a sales budget for the 2 quarters ending June 30, 2020. List the products and show for each quarter and for the 6 months, units, selling price, and total sales by product and in total.

**E24.3 (LO 2)** Service Thome and Crede, CPAs, are preparing their service revenue (sales) budget for the coming year (2020). The practice is divided into three departments: auditing, tax, and consulting. Billable hours for each department, by quarter, are provided below.

*Prepare a sales budget for 4 quarters.*

| Department | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 |
|---|---|---|---|---|
| Auditing | 2,300 | 1,600 | 2,000 | 2,400 |
| Tax | 3,000 | 2,200 | 2,000 | 2,500 |
| Consulting | 1,500 | 1,500 | 1,500 | 1,500 |

Average hourly billing rates are auditing $80, tax $90, and consulting $110.

### Instructions

Prepare the service revenue (sales) budget for 2020 by listing the departments and showing for each quarter and the year in total, billable hours, billable rate, and total revenue.

**E24.4 (LO 2)** Turney Company produces and sells automobile batteries, the heavy-duty HD-240. The 2020 sales forecast is as follows.

*Prepare quarterly production budgets.*

Excel

| Quarter | HD-240 |
|---|---|
| 1 | 5,000 |
| 2 | 7,000 |
| 3 | 8,000 |
| 4 | 10,000 |

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The January 1, 2020, inventory of HD-240 is 2,000 units. Management desires an ending inventory each quarter equal to 40% of the next quarter's sales. Sales in the first quarter of 2021 are expected to be 25% higher than sales in the same quarter in 2020.

**Instructions**

Prepare quarterly production budgets for each quarter and in total for 2020.

*Prepare a direct materials purchases budget.*

**E24.5 (LO 2)** DeWitt Industries has adopted the following production budget for the first 4 months of 2020.

| Month | Units | Month | Units |
|---|---|---|---|
| January | 10,000 | March | 5,000 |
| February | 8,000 | April | 4,000 |

Each unit requires 2 pounds of raw materials costing $3 per pound. On December 31, 2019, the ending raw materials inventory was 4,000 pounds. Management wants to have a raw materials inventory at the end of the month equal to 20% of next month's production requirements.

**Instructions**

Prepare a direct materials purchases budget by month for the first quarter.

*Prepare production and direct materials budgets by quarters for 6 months.*

**E24.6 (LO 2)** On January 1, 2020, the Hardin Company budget committee has reached agreement on the following data for the 6 months ending June 30, 2020.

Sales units: First quarter 5,000; second quarter 6,000; third quarter 7,000.

Ending raw materials inventory: 40% of the next quarter's production requirements.

Ending finished goods inventory: 25% of the next quarter's expected sales units.

Third-quarter production: 7,200 units.

The ending raw materials and finished goods inventories at December 31, 2019, follow the same percentage relationships to production and sales that occur in 2020. Three pounds of raw materials are required to make each unit of finished goods. Raw materials purchased are expected to cost $4 per pound.

**Instructions**

**a.** Prepare a production budget by quarters for the 6-month period ended June 30, 2020.

**b.** Prepare a direct materials budget by quarters for the 6-month period ended June 30, 2020.

*Calculate raw materials purchases in dollars.*

**E24.7 (LO 2)** Rensing Ltd. estimates sales for the second quarter of 2020 will be as follows.

| Month | Units |
|---|---|
| April | 2,550 |
| May | 2,675 |
| June | 2,390 |

The target ending inventory of finished products is as follows.

| | |
|---|---|
| March 31 | 2,000 |
| April 30 | 2,230 |
| May 31 | 2,200 |
| June 30 | 2,310 |

Two units of materials are required for each unit of finished product. Production for July is estimated at 2,700 units to start building inventory for the fall sales period. Rensing's policy is to have an inventory of raw materials at the end of each month equal to 50% of the following month's production requirements.

Raw materials are expected to cost $4 per unit throughout the period.

**Instructions**

Calculate the May raw materials purchases in dollars.

(CGA adapted)

*Prepare a production and a direct materials budget.*

**E24.8 (LO 2)** Fuqua Company's sales budget projects unit sales of part 198Z of 10,000 units in January, 12,000 units in February, and 13,000 units in March. Each unit of part 198Z requires 4 pounds of materials, which cost $2 per pound. Fuqua Company desires its ending raw materials inventory to equal 40% of the next month's production requirements, and its ending finished goods inventory to equal 20% of the next month's expected unit sales. These goals were met at December 31, 2019.

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### Instructions

**a.** Prepare a production budget for January and February 2020.

**b.** Prepare a direct materials budget for January 2020.

**E24.9 (LO 3)** Rodriguez, Inc., is preparing its direct labor budget for 2020 from the following production budget based on a calendar year.

*Prepare a direct labor budget.*

| Quarter | Units | Quarter | Units |
|---|---|---|---|
| 1 | 20,000 | 3 | 35,000 |
| 2 | 25,000 | 4 | 30,000 |

Each unit requires 1.5 hours of direct labor.

### Instructions

Prepare a direct labor budget for 2020. Wage rates are expected to be $16 for the first 2 quarters and $18 for quarters 3 and 4.

**E24.10 (LO 2, 3)** Lowell Company makes and sells artistic frames for pictures. The controller is responsible for preparing the master budget and has accumulated the following information for 2020.

*Prepare production and direct labor budgets.*

| | January | February | March | April | May |
|---|---|---|---|---|---|
| Estimated unit sales | 12,000 | 14,000 | 13,000 | 11,000 | 11,000 |
| Sales price per unit | $50.00 | $47.50 | $47.50 | $47.50 | $47.50 |
| Direct labor hours per unit | 2.0 | 2.0 | 1.5 | 1.5 | 1.5 |
| Wage per direct labor hour | $8.00 | $8.00 | $8.00 | $9.00 | $9.00 |

Lowell has a labor contract that calls for a wage increase to $9.00 per hour on April 1. New labor-saving machinery has been installed and will be fully operational by March 1.

Lowell expects to begin the year with 17,600 frames on hand and has a policy of carrying an end-of-month inventory of 100% of the following month's sales, plus 40% of the second following month's sales.

### Instructions

Prepare a production budget and a direct labor budget for Lowell Company by month and for the first quarter of the year. The direct labor budget should include direct labor hours.

(CMA-Canada adapted)

**E24.11 (LO 3)** Atlanta Company is preparing its manufacturing overhead budget for 2020. Relevant data consist of the following.

*Prepare a manufacturing overhead budget for the year.*

Units to be produced (by quarters): 10,000, 12,000, 14,000, 16,000.

Direct labor: time is 1.5 hours per unit.

Variable overhead costs per direct labor hour: indirect materials $0.80; indirect labor $1.20; and maintenance $0.50.

Fixed overhead costs per quarter: supervisory salaries $35,000; depreciation $15,000; and maintenance $12,000.

### Instructions

Prepare the manufacturing overhead budget for the year, showing quarterly data.

**E24.12 (LO 3)** Kirkland Company combines its operating expenses for budget purposes in a selling and administrative expense budget. For the first 6 months of 2020, the following data are available.

*Prepare a selling and administrative expense budget for 2 quarters.*

1. Sales: 20,000 units quarter 1; 22,000 units quarter 2.
2. Variable costs per dollar of sales: sales commissions 5%, delivery expense 2%, and advertising 3%.
3. Fixed costs per quarter: sales salaries $12,000, office salaries $8,000, depreciation $4,200, insurance $1,500, utilities $800, and repairs expense $500.
4. Unit selling price: $20.

### Instructions

Prepare a selling and administrative expense budget by quarters for the first 6 months of 2020.

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*Prepare a budgeted income statement for the year.*

**E24.13 (LO 3)** Fultz Company has accumulated the following budget data for the year 2020.

1. Sales: 30,000 units, unit selling price $85.
2. Cost of one unit of finished goods: direct materials 1 pound at $5 per pound, direct labor 3 hours at $15 per hour, and manufacturing overhead $5 per direct labor hour.
3. Inventories (raw materials only): beginning, 10,000 pounds; ending, 15,000 pounds.
4. Selling and administrative expenses: $170,000; interest expense: $30,000.
5. Income taxes: 30% of income before income taxes.

**Instructions**

**a.** Prepare a schedule showing the computation of cost of goods sold for 2020.

**b.** Prepare a budgeted multiple-step income statement for 2020.

*Prepare a cash budget for 2 months.*

**E24.14 (LO 4)** Danner Company expects to have a cash balance of $45,000 on January 1, 2020. Relevant monthly budget data for the first 2 months of 2020 are as follows.

Collections from customers: January $85,000, February $150,000.

Payments for direct materials: January $50,000, February $75,000.

Direct labor: January $30,000, February $45,000. Wages are paid in the month they are incurred.

Manufacturing overhead: January $21,000, February $25,000. These costs include depreciation of $1,500 per month. All other overhead costs are paid as incurred.

Selling and administrative expenses: January $15,000, February $20,000. These costs are exclusive of depreciation. They are paid as incurred.

Sales of marketable securities in January are expected to realize $12,000 in cash. Danner Company has a line of credit at a local bank that enables it to borrow up to $25,000. The company wants to maintain a minimum monthly cash balance of $20,000.

**Instructions**

Prepare a cash budget for January and February.

*Prepare a cash budget.*

**E24.15 (LO 4)** Deitz Corporation is projecting a cash balance of $30,000 in its December 31, 2019, balance sheet. Deitz's schedule of expected collections from customers for the first quarter of 2020 shows total collections of $185,000. The schedule of expected payments for direct materials for the first quarter of 2020 shows total payments of $43,000. Other information gathered for the first quarter of 2020 is sale of equipment $3,000, direct labor $70,000, manufacturing overhead $35,000, selling and administrative expenses $45,000, and purchase of securities $14,000. Deitz wants to maintain a balance of at least $25,000 cash at the end of each quarter.

**Instructions**

Prepare a cash budget for the first quarter.

*Prepare cash budget for a month.*

**E24.16 (LO 4)** The controller of Trenshaw Company wants to improve the company's control system by preparing a month-by-month cash budget. The following information is for the month ending July 31, 2020.

| | |
|---|---|
| June 30, 2020, cash balance | $45,000 |
| Dividends to be declared on July 15* | 12,000 |
| Cash expenditures to be paid in July for operating expenses | 40,800 |
| Amortization expense in July | 4,500 |
| Cash collections to be received in July | 90,000 |
| Merchandise purchases to be paid in cash in July | 56,200 |
| Equipment to be purchased for cash in July | 20,000 |

*Dividends are payable 30 days after declaration to shareholders of record on the declaration date.

Trenshaw Company wants to keep a minimum cash balance of $25,000.

**Instructions**

**a.** Prepare a cash budget for the month ended July 31, 2020, and indicate how much money, if any, Trenshaw Company will need to borrow to meet its minimum cash requirement.

**b.** Explain how cash budgeting can reduce the cost of short-term borrowing.

(CGA adapted)

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**E24.17 (LO 4)** Nieto Company's budgeted sales and direct materials purchases are as follows.

*Prepare schedules of expected collections and payments.*

| | Budgeted Sales | Budgeted D.M. Purchases |
|---|---|---|
| January | $200,000 | $30,000 |
| February | 220,000 | 36,000 |
| March | 250,000 | 38,000 |

Nieto's sales are 30% cash and 70% credit. Credit sales are collected 10% in the month of sale, 50% in the month following sale, and 36% in the second month following sale; 4% are uncollectible. Nieto's purchases are 50% cash and 50% on account. Purchases on account are paid 40% in the month of purchase, and 60% in the month following purchase.

### Instructions

**a.** Prepare a schedule of expected collections from customers for March.

**b.** Prepare a schedule of expected payments for direct materials for March.

**E24.18 (LO 4)** Service Green Landscaping Inc. is preparing its budget for the first quarter of 2020. The next step in the budgeting process is to prepare a cash receipts schedule and a cash payments schedule. To that end the following information has been collected.

*Prepare schedules for cash receipts and cash payments, and determine ending balances for balance sheet.*

Clients usually pay 60% of their fee in the month that service is performed, 30% the month after, and 10% the second month after receiving service.

Actual service revenue for 2019 and expected service revenues for 2020 are November 2019, $80,000; December 2019, $90,000; January 2020, $100,000; February 2020, $120,000; and March 2020, $140,000.

Purchases of landscaping supplies (direct materials) are paid 60% in the month of purchase and 40% the following month. Actual purchases for 2019 and expected purchases for 2020 are December 2019, $14,000; January 2020, $12,000; February 2020, $15,000; and March 2020, $18,000.

### Instructions

**a.** Prepare the following schedules for each month in the first quarter of 2020 and for the quarter in total:

**1.** Expected collections from clients.

**2.** Expected payments for landscaping supplies.

**b.** Determine the following balances at March 31, 2020:

**1.** Accounts receivable.

**2.** Accounts payable.

**E24.19 (LO 4, 5)** Service Pletcher Dental Clinic is a medium-sized dental service specializing in family dental care. The clinic is currently preparing the master budget for the first 2 quarters of 2020. All that remains in this process is the cash budget. The following information has been collected from other portions of the master budget and elsewhere.

*Prepare a cash budget for 2 quarters.*

| | |
|---|---|
| Beginning cash balance | $ 30,000 |
| Required minimum cash balance | 25,000 |
| Payment of income taxes (2nd quarter) | 4,000 |
| Professional salaries: | |
| 1st quarter | 140,000 |
| 2nd quarter | 140,000 |
| Interest from investments (2nd quarter) | 7,000 |
| Overhead costs: | |
| 1st quarter | 77,000 |
| 2nd quarter | 100,000 |
| Selling and administrative costs, including $2,000 depreciation: | |
| 1st quarter | 50,000 |
| 2nd quarter | 70,000 |
| Purchase of equipment (2nd quarter) | 50,000 |
| Sale of equipment (1st quarter) | 12,000 |
| Collections from patients: | |
| 1st quarter | 235,000 |
| 2nd quarter | 380,000 |
| Interest payments (2nd quarter) | 200 |

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**Instructions**

Prepare a cash budget for each of the first two quarters of 2020.

*Prepare a purchases budget and budgeted income statement for a merchandiser.*

**E24.20 (LO 5)** Service In May 2020, the budget committee of Grand Stores assembles the following data in preparation of budgeted merchandise purchases for the month of June.

1. Expected sales: June $500,000, July $600,000.
2. Cost of goods sold is expected to be 75% of sales.
3. Desired ending merchandise inventory is 30% of the following (next) month's cost of goods sold.
4. The beginning inventory at June 1 will be the desired amount.

**Instructions**

a. Compute the budgeted merchandise purchases for June.
b. Prepare the budgeted multiple-step income statement for June through gross profit.

*Prepare a direct labor budget for a service company.*

**E24.21 (LO 5)** Emeric and Ellie's Painting Service estimates that it will paint 10 small homes, 5 medium homes, and 2 large homes during the month of June 2020. The company estimates its direct labor needs as 40 hours per small home, 70 hours for a medium home, and 120 hours for a large home. Its average cost for direct labor is $18 per hour.

**Instructions**

Prepare a direct labor budget for Emeric and Ellie's Painting Service for June 2020.

## Problems: Set A

*Prepare budgeted income statement and supporting budgets.*

Excel

**P24.1A (LO 2, 3)** Cook Farm Supply Company manufactures and sells a pesticide called Snare. The following data are available for preparing budgets for Snare for the first 2 quarters of 2020.

1. Sales: quarter 1, 40,000 bags; quarter 2, 56,000 bags. Selling price is $60 per bag.
2. Direct materials: each bag of Snare requires 4 pounds of Gumm at a cost of $3.80 per pound and 6 pounds of Tarr at $1.50 per pound.
3. Desired inventory levels:

| Type of Inventory | January 1 | April 1 | July 1 |
|---|---|---|---|
| Snare (bags) | 8,000 | 15,000 | 18,000 |
| Gumm (pounds) | 9,000 | 10,000 | 13,000 |
| Tarr (pounds) | 14,000 | 20,000 | 25,000 |

4. Direct labor: direct labor time is 15 minutes per bag at an hourly rate of $16 per hour.
5. Selling and administrative expenses are expected to be 15% of sales plus $175,000 per quarter.
6. Interest expense is $100,000 for the two quarters.
7. Income taxes are expected to be 30% of income before income taxes.

Your assistant has prepared two budgets: (1) the manufacturing overhead budget shows expected costs to be 125% of direct labor cost, and (2) the direct materials budget for Tarr shows the cost of Tarr purchases to be $297,000 in quarter 1 and $439,500 in quarter 2.

**Instructions**

Net income $881,160
Cost per bag $33.20

Prepare the budgeted multiple-step income statement for the first 6 months and all required operating budgets by quarters. (*Note:* Use variable and fixed in the selling and administrative expense budget.) Do not prepare the manufacturing overhead budget or the direct materials budget for Tarr.

*Prepare sales, production, direct materials, direct labor, and income statement budgets.*

**P24.2A (LO 2, 3)** Deleon Inc. is preparing its annual budgets for the year ending December 31, 2020. Accounting assistants furnish the data shown below.

| | Product JB 50 | Product JB 60 |
|---|---|---|
| Sales budget: | | |
| Anticipated volume in units | 400,000 | 200,000 |
| Unit selling price | $20 | $25 |

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| | Product JB 50 | Product JB 60 |
|---|---|---|
| Production budget: | | |
| Desired ending finished goods units | 30,000 | 15,000 |
| Beginning finished goods units | 25,000 | 10,000 |
| Direct materials budget: | | |
| Direct materials per unit (pounds) | 2 | 3 |
| Desired ending direct materials pounds | 30,000 | 10,000 |
| Beginning direct materials pounds | 40,000 | 15,000 |
| Cost per pound | $3 | $4 |
| Direct labor budget: | | |
| Direct labor time per unit | 0.4 | 0.6 |
| Direct labor rate per hour | $12 | $12 |
| Budgeted income statement: | | |
| Total unit cost | $13 | $20 |

An accounting assistant has prepared the detailed manufacturing overhead budget and the selling and administrative expense budget. The latter shows selling expenses of $560,000 for product JB 50 and $360,000 for product JB 60, and administrative expenses of $540,000 for product JB 50 and $340,000 for product JB 60. Interest expense is $150,000 (not allocated to products). Income taxes are expected to be 30%.

a. Total sales $13,000,000
b. Required production units:
JB 50, 405,000
JB 60, 205,000
c. Total cost of direct materials purchases $4,840,000
d. Total direct labor cost $3,420,000
e. Net income $1,295,000

### Instructions

Prepare the following budgets for the year. Show data for each product. Quarterly budgets should not be prepared.

**a.** Sales.
**b.** Production.
**c.** Direct materials.
**d.** Direct labor.
**e.** Multiple-step income statement (*Note:* income taxes are not allocated to the products).

**P24.3A (LO 2)** Hill Industries had sales in 2019 of $6,800,000 and gross profit of $1,100,000. Management is considering two alternative budget plans to increase its gross profit in 2020.

*Prepare sales and production budgets and compute cost per unit under two plans.*

Plan A would increase the selling price per unit from $8.00 to $8.40. Sales volume would decrease by 10% from its 2019 level. Plan B would decrease the selling price per unit by $0.50. The marketing department expects that the sales volume would increase by 100,000 units.

At the end of 2019, Hill has 40,000 units of inventory on hand. If Plan A is accepted, the 2020 ending inventory should be equal to 5% of the 2020 sales. If Plan B is accepted, the ending inventory should be equal to 60,000 units. Each unit produced will cost $1.80 in direct labor, $1.40 in direct materials, and $1.20 in variable overhead. The fixed overhead for 2020 should be $1,895,000.

### Instructions

**a.** Prepare a sales budget for 2020 under each plan.
**b.** Prepare a production budget for 2020 under each plan.
**c.** Compute the production cost per unit under each plan. Why is the cost per unit different for each of the two plans? (Round to two decimals.)
**d.** Which plan should be accepted? (*Hint:* Compute the gross profit under each plan.)

c. Unit cost: Plan A $6.88
Plan B $6.35
d. Gross profit:
Plan A $1,162,800
Plan B $1,092,500

**P24.4A (LO 4)** Colter Company prepares monthly cash budgets. Relevant data from operating budgets for 2020 are as follows.

*Prepare cash budget for 2 months.*

| | January | February |
|---|---|---|
| Sales | $360,000 | $400,000 |
| Direct materials purchases | 120,000 | 125,000 |
| Direct labor | 90,000 | 100,000 |
| Manufacturing overhead | 70,000 | 75,000 |
| Selling and administrative expenses | 79,000 | 85,000 |

All sales are on account. Collections are expected to be 50% in the month of sale, 30% in the first month following the sale, and 20% in the second month following the sale. Sixty percent (60%) of direct materials purchases are paid in cash in the month of purchase, and the balance due is paid in the month following the purchase. All other items above are paid in the month incurred except for selling and administrative expenses that include $1,000 of depreciation per month.

Other data:

1. Credit sales: November 2019, $250,000; December 2019, $320,000.
2. Purchases of direct materials: December 2019, $100,000.
3. Other receipts: January—collection of December 31, 2019, notes receivable $15,000; February—proceeds from sale of securities $6,000.
4. Other disbursements: February—payment of $6,000 cash dividend.

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The company's cash balance on January 1, 2020, is expected to be $60,000. The company wants to maintain a minimum cash balance of $50,000.

a. January: collections $326,000; payments $112,000
b. Ending cash balance: January $51,000 February $50,000

### Instructions

**a.** Prepare schedules for (1) expected collections from customers and (2) expected payments for direct materials purchases for January and February.

**b.** Prepare a cash budget for January and February in columnar form.

*Prepare purchases and income statement budgets for a merchandiser.*

**P24.5A (LO 5)** The budget committee of Suppar Company collects the following data for its San Miguel Store in preparing budgeted income statements for May and June 2020.

1. Sales for May are expected to be $800,000. Sales in June and July are expected to be 5% higher than the preceding month.
2. Cost of goods sold is expected to be 75% of sales.
3. Company policy is to maintain ending merchandise inventory at 10% of the following month's cost of goods sold.
4. Operating expenses are estimated to be as follows:

| | |
|---|---|
| Sales salaries | $35,000 per month |
| Advertising | 6% of monthly sales |
| Delivery expense | 2% of monthly sales |
| Sales commissions | 5% of monthly sales |
| Rent expense | $5,000 per month |
| Depreciation | $800 per month |
| Utilities | $600 per month |
| Insurance | $500 per month |

5. Interest expense is $2,000 per month. Income taxes are estimated to be 30% of income before income taxes.

a. Purchases: May $603,000 June $633,150
b. Net income: May $36,470 June $39,830

### Instructions

**a.** Prepare the merchandise purchases budget for each month in columnar form.

**b.** Prepare budgeted multiple-step income statements for each month in columnar form. Show in the statements the details of cost of goods sold.

*Prepare budgeted cost of goods sold, income statement, retained earnings, and balance sheet.*

**P24.6A (LO 3, 4)** Krause Industries' balance sheet at December 31, 2019, is presented below.

**Krause Industries**
**Balance Sheet**
**December 31, 2019**

**Assets**

| | | |
|---|---|---|
| Current assets | | |
| Cash | | $ 7,500 |
| Accounts receivable | | 73,500 |
| Finished goods inventory (1,500 units) | | 24,000 |
| Total current assets | | 105,000 |
| Property, plant, and equipment | | |
| Equipment | $40,000 | |
| Less: Accumulated depredation | 10,000 | 30,000 |
| Total assets | | $135,000 |

**Liabilities and Stockholders' Equity**

| | | |
|---|---|---|
| Liabilities | | |
| Notes payable | | $ 25,000 |
| Accounts payable | | 45,000 |
| Total liabilities | | 70,000 |
| Stockholders' equity | | |
| Common stock | $40,000 | |
| Retained earnings | 25,000 | |
| Total stockholders' equity | | 65,000 |
| Total liabilities and stockholders' equity | | $135,000 |

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Budgeted data for the year 2020 include the following.

| | 2020 | |
|---|---|---|
| | Quarter 4 | Total |
| Sales budget (8,000 units at $32) | $76,800 | $256,000 |
| Direct materials used | 17,000 | 62,500 |
| Direct labor | 12,500 | 50,900 |
| Manufacturing overhead applied | 10,000 | 48,600 |
| Selling and administrative expenses | 18,000 | 75,000 |

To meet sales requirements and to have 2,500 units of finished goods on hand at December 31, 2020, the production budget shows 9,000 required units of output. The total unit cost of production is expected to be $18. Krause uses the first-in, first-out (FIFO) inventory costing method. Interest expense is expected to be $3,500 for the year. Income taxes are expected to be 40% of income before income taxes. In 2020, the company expects to declare and pay an $8,000 cash dividend.

The company's cash budget shows an expected cash balance of $5,880 at December 31, 2020. All sales and purchases are on account. It is expected that 60% of quarterly sales are collected in cash within the quarter and the remainder is collected in the following quarter. Direct materials purchased from suppliers are paid 50% in the quarter incurred and the remainder in the following quarter. Purchases in the fourth quarter were the same as the materials used. In 2020, the company expects to purchase additional equipment costing $9,000. $4,000 of depreciation expense on equipment is included in the budget data and split equally between manufacturing overhead and selling and administrative expenses. Krause expects to pay $8,000 on the outstanding notes payable balance plus all interest due and payable to December 31 (included in interest expense $3,500, above). Accounts payable at December 31, 2020, includes amounts due suppliers (see above) plus other accounts payable relating to manufacturing overhead of $7,200. Unpaid income taxes at December 31 will be $5,000.

### Instructions

Prepare a budgeted statement of cost of goods sold, budgeted multiple-step income statement and retained earnings statement for 2020, and a budgeted classified balance sheet at December 31, 2020.

Net income $21,900
Total assets $116,600

## Continuing Cases

### Current Designs

Excel

**CD24** Diane Buswell is preparing the 2020 budget for one of **Current Designs**' rotomolded kayaks. Extensive meetings with members of the sales department and executive team have resulted in the following unit sales projections for 2020.

| | |
|---|---|
| Quarter 1 | 1,000 kayaks |
| Quarter 2 | 1,500 kayaks |
| Quarter 3 | 750 kayaks |
| Quarter 4 | 750 kayaks |

Current Designs' policy is to have finished goods ending inventory in a quarter equal to 20% of the next quarter's anticipated sales. Preliminary sales projections for 2021 are 1,100 units for the first quarter and 1,500 units for the second quarter. Ending inventory of finished goods at December 31, 2019, will be 200 rotomolded kayaks.

Production of each kayak requires 54 pounds of polyethylene powder and a finishing kit (rope, seat, hardware, etc.). Company policy is that the ending inventory of polyethylene powder should be 25% of the amount needed for production in the next quarter. Assume that the ending inventory of polyethylene powder on December 31, 2019, is 19,400 pounds. The finishing kits can be assembled as they are needed. As a result, Current Designs does not maintain a significant inventory of the finishing kits.

The polyethylene powder used in these kayaks costs $1.50 per pound, and the finishing kits cost $170 each. Production of a single kayak requires 2 hours of time by more experienced, type I employees and 3 hours of finishing time by type II employees. The type I employees are paid $15 per hour, and the type II employees are paid $12 per hour.

Selling and administrative expenses for this line are expected to be $45 per unit sold plus $7,500 per quarter. Manufacturing overhead is assigned at 150% of labor costs.

### Instructions

Prepare the production budget, direct materials budget, direct labor budget, manufacturing overhead budget, and selling and administrative budget for this product line by quarter and in total for 2020.

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### Waterways

(*Note:* This is a continuation of the Waterways case from Chapters 19–23.)

**WP24** Waterways Corporation is preparing its budget for the coming year, 2020. The first step is to plan for the first quarter of that coming year. The company has gathered information from its managers in preparation of the budgeting process. This problem asks you to prepare the various budgets that comprise the master budget for 2020.

*Go to* **WileyPLUS** *for complete case details and instructions.*

## Comprehensive Case

**CC24.1** **Service** Auburn Circular Club is planning a major fundraiser that it hopes will become a successful annual event: sponsoring a professional rodeo. For this case, you will encounter many managerial accounting issues that would be common for a start-up business, such as CVP analysis (Chapter 22), incremental analysis (Chapter 23), and budgetary planning (Chapter 24).

**CC24.2** Sweats Galore is a new business venture that will make custom sweatshirts using a silk-screen process. In helping the company's owner, Michael Woods, set up his business, you will have the opportunity to apply your understanding of CVP relationships (Chapter 22) and budgetary planning (Chapter 24).

*Go to* **WileyPLUS** *for complete details and instructions for both cases.*

## Expand Your Critical Thinking

### Decision-Making Across the Organization

**CT24.1** Palmer Corporation operates on a calendar-year basis. It begins the annual budgeting process in late August when the president establishes targets for the total dollar sales and net income before taxes for the next year.

The sales target is given first to the marketing department. The marketing manager formulates a sales budget by product line in both units and dollars. From this budget, sales quotas by product line in units and dollars are established for each of the corporation's sales districts. The marketing manager also estimates the cost of the marketing activities required to support the target sales volume and prepares a tentative marketing expense budget.

The executive vice president uses the sales and profit targets, the sales budget by product line, and the tentative marketing expense budget to determine the dollar amounts that can be devoted to manufacturing and corporate office expense. The executive vice president prepares the budget for corporate expenses. She then forwards to the production department the product-line sales budget in units and the total dollar amount that can be devoted to manufacturing.

The production manager meets with the factory managers to develop a manufacturing plan that will produce the required units when needed within the cost constraints set by the executive vice president. The budgeting process usually comes to a halt at this point because the production department does not consider the financial resources allocated to be adequate.

When this standstill occurs, the vice president of finance, the executive vice president, the marketing manager, and the production manager meet together to determine the final budgets for each of the areas. This normally results in a modest increase in the total amount available for manufacturing costs and cuts in the marketing expense and corporate office expense budgets. The total sales and net income figures proposed by the president are seldom changed. Although the participants are seldom pleased with the compromise, these budgets are final. Each executive then develops a new detailed budget for the operations in his or her area.

None of the areas has achieved its budget in recent years. Sales often run below the target. When budgeted sales are not achieved, each area is expected to cut costs so that the president's profit target can be met. However, the profit target is seldom met because costs are not cut enough. In fact, costs often run above the original budget in all functional areas (marketing, production, and corporate office).

The president is disturbed that Palmer has not been able to meet the sales and profit targets. He hired a consultant with considerable experience with companies in Palmer's industry. The consultant reviewed the budgets for the past 4 years. He concluded that the product line sales budgets were reasonable and that the cost and expense budgets were adequate for the budgeted sales and production levels.

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### Instructions

With the class divided into groups, answer the following.

**a.** Discuss how the budgeting process employed by Palmer Corporation contributes to the failure to achieve the president's sales and profit targets.

**b.** Suggest how Palmer Corporation's budgeting process could be revised to correct the problems.

**c.** Should the functional areas be expected to cut their costs when sales volume falls below budget? Explain your answer.

(CMA adapted)

## Managerial Analysis

**CT24.2** Elliot & Hesse Inc. manufactures ergonomic devices for computer users. Some of its more popular products include anti-glare filters and privacy filters (for computer monitors) and keyboard stands with wrist rests. Over the past 5 years, it experienced rapid growth, with sales of all products increasing 20% to 50% each year.

Last year, some of the primary manufacturers of computers began introducing new products with some of the ergonomic designs, such as anti-glare filters and wrist rests, already built in. As a result, sales of Elliot & Hesse's accessory devices have declined somewhat. The company believes that the privacy filters will probably continue to show growth, but that the other products will probably continue to decline. When the next year's budget was prepared, increases were built into research and development so that replacement products could be developed or the company could expand into some other product line. Some product lines being considered are general-purpose ergonomic devices including back supports, foot rests, and sloped writing pads.

The most recent results have shown that sales decreased more than was expected for the anti-glare filters. As a result, the company may have a shortage of funds. Top management has therefore asked that all expenses be reduced 10% to compensate for these reduced sales. Summary budget information is as follows.

| | |
|---|---|
| Direct materials | $240,000 |
| Direct labor | 110,000 |
| Insurance | 50,000 |
| Depreciation | 90,000 |
| Machine repairs | 30,000 |
| Sales salaries | 50,000 |
| Office salaries | 80,000 |
| Factory salaries (indirect labor) | 50,000 |
| Total | $700,000 |

### Instructions

Using the information above, answer the following questions.

**a.** What are the implications of reducing each of the costs? For example, if the company reduces direct materials costs, it may have to do so by purchasing lower-quality materials. This may affect sales in the long run.

**b.** Based on your analysis in (a), what do you think is the best way to obtain the $70,000 in cost savings requested? Be specific. Are there any costs that cannot or should not be reduced? Why?

## Real-World Focus

**CT24.3** Information regarding many approaches to budgeting can be found online. The following activity investigates the merits of "zero-based" budgeting, as discussed by Michael LaFaive, Director of Fiscal Policy of the **Mackinac Center for Public Policy**.

### Instructions

Read the article at the Mackinac website and answer the following questions.

**a.** How does zero-based budgeting differ from standard budgeting procedures?

**b.** What are some potential advantages of zero-based budgeting?

**c.** What are some potential disadvantages of zero-based budgeting?

**d.** How often do departments in Oklahoma undergo zero-based budgeting?

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## Communication Activity

**CT24.4** **Service** In order to better serve their rural patients, Drs. Joe and Rick Parcells (brothers) began giving safety seminars. Especially popular were their "emergency-preparedness" talks given to farmers. Many people asked whether the "kit" of materials the doctors recommended for common farm emergencies was commercially available.

After checking with several suppliers, the doctors realized that no other company offered the supplies they recommended in their seminars, packaged in the way they described. Their wives, Megan and Sue, agreed to make a test package by ordering supplies from various medical supply companies and assembling them into a "kit" that could be sold at the seminars. When these kits proved a runaway success, the sisters-in-law decided to market them. At the advice of their accountant, they organized this venture as a separate company, called Life Protection Products (LPP), with Megan Parcells as CEO and Sue Parcells as Secretary-Treasurer.

LPP soon started receiving requests for the kits from all over the country, as word spread about their availability. Even without advertising, LPP was able to sell its full inventory every month. However, the company was becoming financially strained. Megan and Sue had about $100,000 in savings, and they invested about half that amount initially. They believed that this venture would allow them to make money. However, at the present time, only about $30,000 of the cash remains, and the company is constantly short of cash.

Megan has come to you for advice. She does not understand why the company is having cash flow problems. She and Sue have not even been withdrawing salaries. However, they have rented a local building and have hired two more full-time workers to help them cope with the increasing demand. They do not think they could handle the demand without this additional help.

Megan is also worried that the cash problems mean that the company may not be able to support itself. She has prepared the cash budget shown below. All seminar customers pay for their products in full at the time of purchase. In addition, several large companies have ordered the kits for use by employees who work in remote sites. They have requested credit terms and have been allowed to pay in the month following the sale. These large purchasers amount to about 25% of the sales at the present time. LPP purchases the materials for the kits about 2 months ahead of time. Megan and Sue are considering slowing the growth of the company by simply purchasing less materials, which will mean selling fewer kits.

The workers are paid weekly. Megan and Sue need about $15,000 cash on hand at the beginning of the month to pay for purchases of raw materials. Right now they have been using cash from their savings, but as noted, only $30,000 is left.

**Life Protection Products**
**Cash Budget**
**For the Quarter Ending June 30, 2020**

| | April | May | June |
|---|---|---|---|
| Cash balance, beginning | $15,000 | $15,000 | $15,000 |
| Cash received | | | |
| From prior month sales | 5,000 | 7,500 | 12,500 |
| From current sales | 15,000 | 22,500 | 37,500 |
| Total cash on hand | 35,000 | 45,000 | 65,000 |
| Cash payments | | | |
| To employees | 3,000 | 3,000 | 3,000 |
| For products | 25,000 | 35,000 | 45,000 |
| Miscellaneous expenses | 5,000 | 6,000 | 7,000 |
| Postage | 1,000 | 1,000 | 1,000 |
| Total cash payments | 34,000 | 45,000 | 56,000 |
| Cash balance | $ 1,000 | $ 0 | $ 9,000 |
| Borrow from savings | $14,000 | $15,000 | $ 1,000 |
| Borrow from bank? | $ 0 | $ 0 | $ 5,000 |

### Instructions

Write a response to Megan Parcells. Explain why LPP is short of cash. Will this company be able to support itself? Explain your answer. Make any recommendations you deem appropriate.

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## Ethics Case

**CT24.5** You are an accountant in the budgetary, projections, and special projects department of Fernetti Conductor, Inc., a large manufacturing company. The president, Richard Brown, asks you on very short notice to prepare some sales and income projections covering the next 2 years of the company's much heralded new product lines. He wants these projections for a series of speeches he is making while on a 2-week trip to eight East Coast brokerage firms. The president hopes to bolster Fernetti's stock sales and price.

You work 23 hours in 2 days to compile the projections, hand-deliver them to the president, and are swiftly but graciously thanked as he departs. A week later, you find time to go over some of your computations and discover a miscalculation that makes the projections grossly overstated. You quickly inquire about the president's itinerary and learn that he has made half of his speeches and has half yet to make. You are in a quandary as to what to do.

### Instructions

**a.** What are the consequences of telling the president of your gross miscalculations?

**b.** What are the consequences of not telling the president of your gross miscalculations?

**c.** What are the ethical considerations to you and the president in this situation?

## All About You

**CT24.6** In order to get your personal finances under control, you need to prepare a personal budget. Assume that you have compiled the following information regarding your expected cash flows for a typical month.

| | | | |
|---|---|---|---|
| Rent payment | $ 500 | Miscellaneous costs | $210 |
| Interest income | 50 | Savings | 50 |
| Income tax withheld | 300 | Eating out | 150 |
| Electricity bill | 85 | Telephone and Internet costs | 125 |
| Groceries | 100 | Student loan payments | 375 |
| Wages earned | 2,500 | Entertainment costs | 250 |
| Insurance | 100 | Transportation costs | 150 |

### Instructions

Using the information above, prepare a personal budget. In preparing this budget, use the format included in the "Steps to Creating a Household Budget" article available at **the balance**'s website (go to the site and do a search for the article). Just skip any unused line items.

## Considering Your Costs and Benefits

**CT24.7** You might hear people say that they "need to learn to live within a budget." The funny thing is that most people who say this haven't actually prepared a personal budget, nor do they intend to. Instead, what they are referring to is a vaguely defined, poorly specified collection of rough ideas of how much they should spend on various aspects of their lives. However, you can't live within or even outside of something that doesn't exist. With that in mind, let's take a look at one aspect of personal-budget templates.

Many personal-budget worksheet templates that are provided for college students treat student loans as an income source. See, for example, the template included in the "Steps to Creating a Household Budget" article available at **the balance**'s website. Based on your knowledge of accounting, is this correct?

**YES:** Student loans provide a source of cash, which can be used to pay costs. As the saying goes, "It all spends the same." Therefore, student loans are income.

**NO:** Student loans must eventually be repaid; therefore, they are not income. As the name indicates, they are loans.

### Instructions

Write a response indicating your position regarding this situation. Provide support for your view.

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# Budgetary Control and Responsibility Accounting

## Chapter Preview

In Chapter 24, we discussed the use of budgets for planning. We now consider how budgets are used by management to control operations. In the following Feature Story on the **Tribeca Grand Hotel**, we see that management uses the budget to adapt to the business environment. This chapter focuses on two aspects of management control: (1) budgetary control and (2) responsibility accounting.

## Feature Story

### Pumpkin Madeleines and a Movie

Perhaps no place in the world has a wider variety of distinctive, high-end accommodations than New York City. It's tough to set yourself apart in the Big Apple, but unique is what the **Tribeca Grand Hotel** is all about.

When you walk through the doors of this triangular-shaped building, nestled in one of Manhattan's most affluent neighborhoods, you immediately encounter a striking eight-story atrium. Although the hotel was completely renovated, it still

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maintains its funky mid-century charm. Just consider the always hip Church Bar. Besides serving up cocktails until 2 a.m., Church's also provides food. These are not the run-of-the-mill, chain hotel, borderline edibles. Church's chef is famous for tantalizing delectables such as duck rillettes, sea salt baked branzino, housemade pappardelle, and pumpkin madeleines.

Another thing that really sets the Tribeca Grand apart is its private screening room. As a guest, you can enjoy plush leather seating, state-of-the-art projection, and digital surround sound, all while viewing a cult classic from the hotel's film series. In fact, on Sundays, free screenings are available to guests and non-guests alike on a first-come-first-served basis.

To attract and satisfy a discerning clientele, the Tribeca Grand's management incurs higher and more unpredictable costs than those of a standard hotel. As fun as it might be to run a high-end hotel, management can't be cavalier about spending money. To maintain profitability, management closely monitors costs and revenues to make sure that they track with budgeted amounts. Further, because of unexpected fluctuations in demand for rooms (think hurricanes or bitterly cold winter weather), management must sometimes revise forecasts and budgets and adapt quickly. To evaluate performance and identify when changes need to be made, the budget needs to be flexible.

**Video** **Watch the *Tribeca Grand* video in WileyPLUS to learn more about real-world budgeting.**

# Chapter Outline

## LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Describe budgetary control and static budget reports. | • Budgetary control<br>• Static budget reports | **DO IT! 1** Static Budget Reports |
| **LO 2** Prepare flexible budget reports. | • Why flexible budgets?<br>• Developing the flexible budget<br>• Flexible budget—a case study<br>• Flexible budget reports | **DO IT! 2** Flexible Budgets |
| **LO 3** Apply responsibility accounting to cost and profit centers. | • Controllable vs. noncontrollable revenues and costs<br>• Principles of performance evaluation<br>• Responsibility reporting system<br>• Types of responsibility centers | **DO IT! 3** Profit Center Responsibility Report |
| **LO 4** Evaluate performance in investment centers. | • Return on investment (ROI)<br>• Responsibility report<br>• Judgmental factors in ROI<br>• Improving ROI | **DO IT! 4** Performance Evaluation |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with Orion for additional tutorials and practice opportunities.**

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# Budgetary Control and Static Budget Reports

**LEARNING OBJECTIVE 1**

Describe budgetary control and static budget reports.

## Budgetary Control

One of management's responsibilities is to control company operations. Control consists of the steps taken by management to see that planned objectives are met. We now ask: How do budgets contribute to control of operations?

The use of budgets in controlling operations is known as **budgetary control**. Such control takes place by means of **budget reports** that compare actual results with planned objectives. The use of budget reports is based on the belief that planned objectives lose much of their potential value without some monitoring of progress along the way. Just as your professors give midterm exams to evaluate your progress, top management requires periodic reports on the progress of department managers toward their planned objectives.

Budget reports provide management with feedback on operations. The feedback for a crucial objective, such as having enough cash on hand to pay bills, may be made daily. For other objectives, such as meeting budgeted annual sales and operating expenses, monthly budget reports may suffice. Budget reports are prepared as frequently as needed. From these reports, management analyzes any differences between actual and planned results and determines their causes. Management then takes corrective action, or it decides to modify future plans. Budgetary control involves the activities shown in Illustration 25.1.

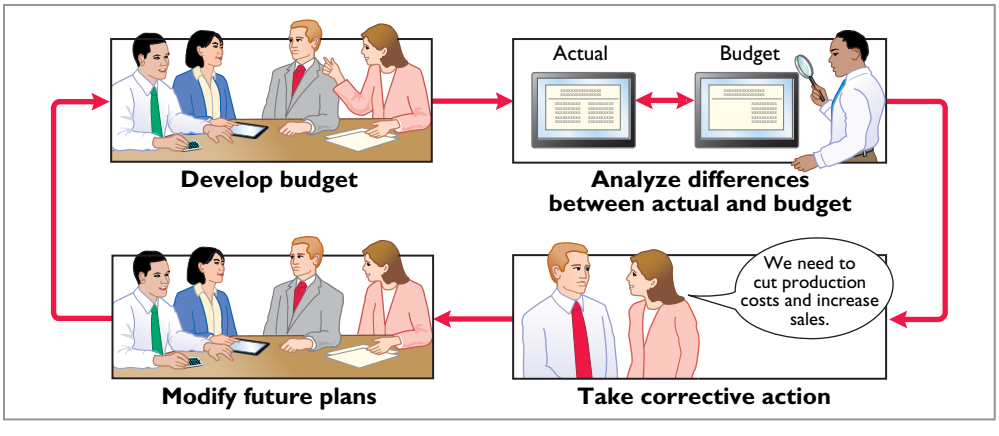


**ILLUSTRATION 25.1**
**Budgetary control activities**

Budgetary control works best when a company has a formalized reporting system. The reporting system does the following:

1. Identifies the name of the budget report, such as the sales budget or the manufacturing overhead budget.
2. States the frequency of the report, such as weekly or monthly.
3. Specifies the purpose of the report.
4. Indicates the primary recipient(s) of the report.

Illustration 25.2 provides a partial budgetary control system for a manufacturing company. Note the frequency of the reports and their emphasis on control. For example, there is a daily report on scrap and a weekly report on labor.

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**ILLUSTRATION 25.2** **Budgetary control reporting system**

| Name of Report | Frequency | Purpose | Primary Recipient(s) |
|---|---|---|---|
| Sales | Weekly | Determine whether sales goals are met | Top management and sales manager |
| Labor | Weekly | Control direct and indirect labor costs | Vice president of production and production department managers |
| Scrap | Daily | Determine efficient use of materials | Production manager |
| Departmental overhead costs | Monthly | Control overhead costs | Department manager |
| Selling expenses | Monthly | Control selling expenses | Sales manager |
| Income statement | Monthly and quarterly | Determine whether income goals are met | Top management |

# Static Budget Reports

You learned in Chapter 24 that the master budget formalizes management's planned objectives for the coming year. When used in budgetary control, each budget included in the master budget is considered to be static. A **static budget** is a projection of budget data **at a single level of activity before actual activity occurs**. These budgets do not consider data for different levels of activity. As a result, companies always compare actual results with budget data at the activity level that was used in developing the master budget.

## Examples

To illustrate the role of a static budget in budgetary control, we will use selected data prepared for Hayes Company in Chapter 24. **Illustration 25.3** provides budget and actual sales data for the Rightride product in the first and second quarters of 2020.

**ILLUSTRATION 25.3**
**Budget and actual sales data**

| Sales | First Quarter | Second Quarter | Total |
|---|---|---|---|
| Budgeted | $180,000 | $210,000 | $390,000 |
| Actual | 179,000 | 199,500 | 378,500 |
| Difference | $ 1,000 | $ 10,500 | $ 11,500 |

**ALTERNATIVE TERMINOLOGY**
The difference between budget and actual is sometimes called a *budget variance*.

The sales budget report for Hayes' first quarter is shown in **Illustration 25.4**. The rightmost column reports the difference between the budgeted and actual amounts (see **Alternative Terminology**).

**ILLUSTRATION 25.4**
**Sales budget report—first quarter**

Hayes Company Sales Budget Report

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 *fx*

| | A | B | C | D |
|---|---|---|---|---|
| 1 | Hayes Company | | | |
| 2 | Sales Budget Report | | | |
| 3 | For the Quarter Ended March 31, 2020 | | | |
| 4 | | | | Difference |
| 5 | | | | Favorable F |
| 6 | Product Line | Budget | Actual | Unfavorable U |
| 7 | Rightride[a] | $180,000 | $179,000 | $1,000 U |
| 8 | | | | |
| 9 | [a]In practice, each product line would be included in the report. | | | |

The report shows that sales are $1,000 under budget—an unfavorable result. This difference is less than 1% of budgeted sales ($1,000 ÷ $180,000 = .0056). Top management's reaction to

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differences is often influenced by the materiality (significance) of the difference. Since the difference of $1,000 is immaterial in this case, we assume that Hayes management takes no specific corrective action.

**Illustration 25.5** shows the sales budget report for the second quarter. It contains one new feature: cumulative year-to-date information. This report indicates that sales for the second quarter are $10,500 below budget. This is 5% of budgeted sales ($10,500 ÷ $210,000). Top management may now conclude that the difference between budgeted and actual sales requires investigation.

**ILLUSTRATION 25.5** **Sales budget report—second quarter**

Hayes Company Sales Budget Report

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P18 fx

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | Hayes Company | | | | | | | |
| 2 | Sales Budget Report | | | | | | | |
| 3 | For the Quarter Ended June 30, 2020 | | | | | | | |
| 4 | | Second Quarter | | | | Year-to-Date | | |
| 5 | | | | Difference | | | | Difference |
| 6 | | | | Favorable F | | | | Favorable F |
| 7 | Product Line | Budget | Actual | Unfavorable U | | Budget | Actual | Unfavorable U |
| 8 | Rightride | $210,000 | $199,500 | $10,500 U | | $390,000 | $378,500 | $11,500 U |
| 9 | | | | | | | | |

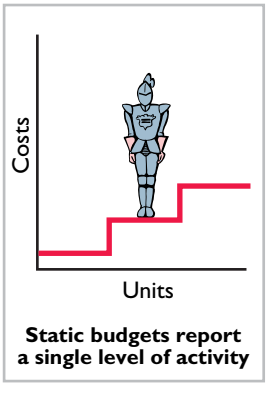
Management's analysis should start by asking the sales manager the cause(s) of the shortfall. Managers should consider the need for corrective action. For example, management may attempt to increase sales by offering sales incentives to customers or by increasing the advertising of Rightrides. Or, if management concludes that a downturn in the economy is responsible for the lower sales, it may modify planned sales and profit goals for the remainder of the year.

## Uses and Limitations

From these examples, you can see that a master sales budget is useful in evaluating the performance of a sales manager. It is now necessary to ask: Is the master budget appropriate for evaluating a manager's performance in controlling costs? Recall that in a static budget, data are not modified or adjusted, regardless of changes in activity. It follows, then, that a static budget is appropriate in evaluating a manager's effectiveness in controlling costs when:

1. The actual level of activity closely approximates the master budget activity level, and/or
2. The behavior of the costs in response to changes in activity is fixed.

A static budget report is, therefore, appropriate for **fixed manufacturing costs** and for **fixed selling and administrative expenses**. But, as you will see shortly, static budget reports may not be a proper basis for evaluating a manager's performance in controlling variable costs.




**Static budgets report a single level of activity**

### DO IT! 1 | Static Budget Reports

Lawler Company expects to produce 5,000 units of product CV93 during the current month. Budgeted variable manufacturing costs per unit are direct materials $6, direct labor $15, and overhead $24. Monthly budgeted fixed manufacturing overhead costs are $10,000 for depreciation and $5,000 for supervision.

In the current month, Lawler actually produced 5,500 units and incurred the following costs: direct materials $33,900, direct labor $74,200, variable overhead $120,500, depreciation $10,000, and supervision $5,000.

Prepare a static budget report. (*Hint:* The Budget column is based on estimated production of 5,000 units while the Actual column is the actual costs incurred during the period.) Were costs controlled? Discuss limitations of this budget.

**ACTION PLAN**

- Classify each cost as variable or fixed.
- Determine the difference as favorable or unfavorable.
- Determine the difference in total variable costs, total fixed costs, and total costs.

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**Solution**

Lawler Company

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | |
|---|---|---|---|---|---|
| 1 | | | | Difference | |
| 2 | | | | Favorable - F | |
| 3 | | Budget | Actual | Unfavorable - U | |
| 4 | Production in units | 5,000 | 5,500 | | |
| 5 | | | | | |
| 6 | Variable costs | | | | |
| 7 | Direct materials ($6) | $ 30,000 | $ 33,900 | $3,900 | U |
| 8 | Direct labor ($15) | 75,000 | 74,200 | 800 | F |
| 9 | Overhead ($24) | 120,000 | 120,500 | 500 | U |
| 10 | Total variable costs | 225,000 | 228,600 | 3,600 | U |
| 11 | | | | | |
| 12 | Fixed costs | | | | |
| 13 | Depreciation | 10,000 | 10,000 | 0 | |
| 14 | Supervision | 5,000 | 5,000 | 0 | |
| 15 | Total fixed costs | 15,000 | 15,000 | 0 | |
| 16 | Total costs | $240,000 | $243,600 | $3,600 | U |
| 17 | | | | | |
| 18 | | | | | |

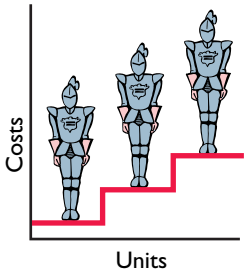
The static budget indicates that actual variable costs exceeded budgeted amounts by $3,600. Fixed costs were exactly as budgeted. The static budget gives the impression that the company did not control its variable costs. However, the static budget does not give consideration to the fact that the company produced 500 more units than planned. As a result, the static budget is not a good tool to evaluate variable costs. It is, however, a good tool to evaluate fixed costs as those should not vary with changes in production volume.

Related exercise material: **BE25.1, BE25.2, DO IT! 25.1, E25.1, and E25.2.**

# Flexible Budget Reports

**LEARNING OBJECTIVE 2**

Prepare flexible budget reports.




**Flexible budgets are static budgets at different activity levels**

In contrast to a static budget, which is based on one level of activity, a **flexible budget** projects budget data for various levels of activity. In essence, **the flexible budget is a series of static budgets at different levels of activity**. The flexible budget recognizes that the budgetary process is more useful if it is adaptable to changed operating conditions.

Flexible budgets can be prepared for each of the types of budgets included in the master budget. For example, **Marriott Hotels** can budget revenues and net income on the basis of 60%, 80%, and 100% of room occupancy. Similarly, **American Van Lines** can budget its operating expenses on the basis of various levels of truck-miles driven. **Duke Energy** can budget revenue and net income on the basis of estimated billions of kwh (kilowatt hours) of residential, commercial, and industrial electricity generated. In the following pages, we will illustrate a flexible budget for manufacturing overhead.

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## Why Flexible Budgets?

Assume that you are the manager in charge of manufacturing overhead in the Assembly Department of Barton Robotics. In preparing the manufacturing overhead budget for 2020, you prepare the static budget shown in **Illustration 25.6** based on a production volume of 10,000 units of robotic controls (see **Helpful Hint**).

**HELPFUL HINT**
The master budget described in Chapter 24 is based on a static budget.

**ILLUSTRATION 25.6**
**Static overhead budget**

Barton Robotics

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| | A | B |
|---|---|---|
| 1 | **Barton Robotics** | |
| 2 | **Manufacturing Overhead Budget (Static)** | |
| 3 | **Assembly Department** | |
| 4 | **For the Year Ended December 31, 2020** | |
| 5 | Budgeted production in units (robotic controls) | 10,000 |
| 6 | | |
| 7 | Budgeted costs | |
| 8 | Indirect materials | $ 250,000 |
| 9 | Indirect labor | 260,000 |
| 10 | Utilities | 190,000 |
| 11 | Depreciation | 280,000 |
| 12 | Property taxes | 70,000 |
| 13 | Supervision | 50,000 |
| 14 | | **$1,100,000** |
| 15 | | |

Fortunately for the company, the demand for robotic controls has increased, and Barton produces and sells 12,000 units during the year rather than 10,000. You are elated! Increased sales means increased profitability, which should mean a bonus or a raise for you and the employees in your department. Unfortunately, a comparison of Assembly Department actual and budgeted costs has put you on the spot. **Illustration 25.7** shows the budget report.

**ILLUSTRATION 25.7**
**Overhead static budget report**

Barton Robotics

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | **Barton Robotics** | | | | |
| 2 | **Manufacturing Overhead Static Budget Report** | | | | |
| 3 | **For the Year Ended December 31, 2020** | | | | |
| 4 | | | | Difference | |
| 5 | | Budget | Actual | Favorable - F Unfavorable - U | |
| 6 | Production in units | 10,000 | 12,000 | | |
| 7 | | | | | |
| 8 | Costs | | | | |
| 9 | Indirect materials | $ 250,000 | $ 295,000 | $ 45,000 | U |
| 10 | Indirect labor | 260,000 | 312,000 | 52,000 | U |
| 11 | Utilities | 190,000 | 225,000 | 35,000 | U |
| 12 | Depreciation | 280,000 | 280,000 | 0 | |
| 13 | Property taxes | 70,000 | 70,000 | 0 | |
| 14 | Supervision | 50,000 | 50,000 | 0 | |
| 15 | | $1,100,000 | $1,232,000 | $132,000 | U |
| 16 | | | | | |

This comparison uses budgeted cost data based on the original activity level (10,000 robotic controls). It indicates that the costs incurred by the Assembly Department are significantly **over budget** for three of the six overhead costs. There is a total unfavorable difference of $132,000, which is 12% over budget ($132,000 ÷ $1,100,000). Your supervisor is very unhappy. Instead of sharing in the company's success, you may find yourself looking for another job. What went wrong?

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**HELPFUL HINT**

**A static budget is not useful for performance evaluation if a company has substantial variable costs.**

When you calm down and carefully examine the manufacturing overhead budget, you identify the problem: The budget data are not relevant! At the time the budget was developed, the company anticipated that only 10,000 units would be produced. Instead, 12,000 units were actually produced. Comparing actual costs incurred at a production level of 12,000 units with budgeted variable costs at an expected production level of 10,000 units is meaningless (see **Helpful Hint**). As production increases, the budget allowances for variable costs should increase proportionately. The variable costs in this example are indirect materials, indirect labor, and utilities.

Analyzing the budget data for these costs at 10,000 units, you arrive at the per unit results shown in **Illustration 25.8**.

**ILLUSTRATION 25.8**
**Variable costs per unit**

| Item | Total Cost | Per Unit |
|---|---|---|
| Indirect materials | $250,000 | $25 |
| Indirect labor | 260,000 | 26 |
| Utilities | 190,000 | 19 |
| | $700,000 | $70 |

Using these per unit costs, **Illustration 25.9** calculates the budgeted variable costs at 12,000 units.

**ILLUSTRATION 25.9**
**Budgeted variable costs, 12,000 units**

| Item | Computation | Total |
|---|---|---|
| Indirect materials | $25 × 12,000 | $300,000 |
| Indirect labor | 26 × 12,000 | 312,000 |
| Utilities | 19 × 12,000 | 228,000 |
| | | $840,000 |

Because fixed costs do not change in total as activity changes, the budgeted amounts for these costs remain the same. **Illustration 25.10** shows the budget report based on the flexible budget for **12,000 units** of production. (Compare this with Illustration 25.7.)

**ILLUSTRATION 25.10**
**Overhead flexible budget report**

Barton Robotics

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| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | **Barton Robotics** | | | | |
| 2 | **Manufacturing Overhead Flexible Budget Report** | | | | |
| 3 | **For the Year Ended December 31, 2020** | | | | |
| 4 | | | | Difference | |
| 5 | | Budget | Actual | Favorable - F Unfavorable - U | |
| 6 | Production in units | 12,000 | 12,000 | | |
| 7 | | | | | |
| 8 | Variable costs | | | | |
| 9 | Indirect materials ($25) | $ 300,000 | $ 295,000 | $5,000 | F |
| 10 | Indirect labor ($26) | 312,000 | 312,000 | 0 | |
| 11 | Utilities ($19) | 228,000 | 225,000 | 3,000 | F |
| 12 | Total variable costs | 840,000 | 832,000 | 8,000 | F |
| 13 | | | | | |
| 14 | Fixed costs | | | | |
| 15 | Depreciation | 280,000 | 280,000 | 0 | |
| 16 | Property taxes | 70,000 | 70,000 | 0 | |
| 17 | Supervision | 50,000 | 50,000 | 0 | |
| 18 | Total fixed costs | 400,000 | 400,000 | 0 | |
| 19 | Total costs | $1,240,000 | $1,232,000 | $8,000 | F |
| 20 | | | | | |

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This flexible budget report indicates that the Assembly Department's costs are **under budget**—a favorable difference. Instead of worrying about being fired, you may be in line for a bonus or a raise after all! As this analysis shows, the only appropriate comparison is between actual costs at 12,000 units of production and budgeted costs at 12,000 units. Flexible budget reports provide this comparison.

## Developing the Flexible Budget

The flexible budget uses the master budget as its basis. To develop the flexible budget, management uses the following steps.

1. Identify the activity index and the relevant range of activity.
2. Identify the variable costs, and determine the budgeted variable cost per unit of activity for each cost.
3. Identify the fixed costs, and determine the budgeted amount for each cost.
4. Prepare the budget for selected increments of activity within the relevant range.

The activity index chosen should significantly influence the costs being budgeted. For manufacturing overhead costs, for example, the activity index is usually the same as the index used in developing the predetermined overhead rate—that is, direct labor hours or machine hours. For selling and administrative expenses, the activity index usually is sales or net sales.

The choice of the increment of activity is largely a matter of judgment. For example, if the relevant range is 8,000 to 12,000 direct labor hours, increments of 1,000 hours may be selected. The flexible budget is then prepared for each increment within the relevant range.

### Service Company Insight NBCUniversal

Fox BroadcastingCompany/ Album/Newscom

#### Just What the Doctor Ordered?

Nobody is immune from the effects of declining revenues—not even movie stars. When the number of viewers of the television show "House," a medical drama, declined by almost 20%, **Fox Broadcasting** said it wanted to cut the license fee that it paid to **NBCUniversal** by 20%. What would NBCUniversal do in response? It might cut the size of the show's cast, which would reduce the payroll costs associated with the show. Or, it could reduce the number of episodes that take advantage of the full cast. Alternatively, it might threaten to quit providing the show to Fox altogether and instead present the show on its own NBC-affiliated channels.

**Source:** Sam Schechner, "Media Business Shorts: NBCU, Fox Taking Scalpel to 'House'," *Wall Street Journal Online* (April 17, 2011).

**Explain how the use of flexible budgets might help to identify the best solution to this problem. (Go to WileyPLUS for this answer and additional questions.)**

## Flexible Budget—A Case Study

To illustrate the flexible budget, we use Fox Company. Fox's management uses a **flexible budget for monthly comparisons** of actual and budgeted manufacturing overhead costs of the Finishing Department. The master budget for the year ending December 31, 2020, shows expected **annual** operating capacity of 120,000 direct labor hours and the overhead costs shown in **Illustration 25.11**.

**ILLUSTRATION 25.11**
**Master budget data**

| Variable Costs | | Fixed Costs | |
|---|---|---|---|
| Indirect materials | $180,000 | Depreciation | $180,000 |
| Indirect labor | 240,000 | Supervision | 120,000 |
| Utilities | 60,000 | Property taxes | 60,000 |
| Total | $480,000 | Total | $360,000 |

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The four steps for developing the flexible budget are applied as follows.

**Step 1.** **Identify the activity index and the relevant range of activity.** The activity index is direct labor hours. The relevant range is 8,000–12,000 direct labor hours per **month**.

**Step 2.** **Identify the variable costs, and determine the budgeted variable cost per unit of activity for each cost.** A cost is variable if total costs vary directly as a result of a change in the activity index, which is direct labor in this case. In this example, indirect materials, indirect labor, and utilities are variable costs. The variable cost per unit is found by dividing each total budgeted cost by the direct labor hours used in preparing the annual master budget (120,000 hours). Illustration 25.12 shows the computations for Fox Company.

**ILLUSTRATION 25.12**
**Computation of variable cost per direct labor hour**

| Variable Costs | Computation | Variable Cost per Direct Labor Hour |
|---|---|---|
| Indirect materials | $180,000 ÷ 120,000 | $1.50 |
| Indirect labor | $240,000 ÷ 120,000 | 2.00 |
| Utilities | $ 60,000 ÷ 120,000 | 0.50 |
| Total | | $4.00 |

**Step 3.** **Identify the fixed costs, and determine the budgeted amount for each cost.** A cost is fixed if the total cost does not vary as a result of changes in the activity index. In this example, depreciation, supervision, and property taxes are fixed costs. Since Fox desires **monthly budget data**, it divides each annual budgeted cost by 12 to find the monthly amounts. Therefore, the monthly budgeted fixed costs are depreciation $15,000, supervision $10,000, and property taxes $5,000.

**Step 4.** **Prepare the budget for selected increments of activity within the relevant range.** Management prepares the budget in increments of 1,000 direct labor hours.

Illustration 25.13 shows Fox's flexible budget.

**ILLUSTRATION 25.13**
**Monthly overhead flexible budget**

Fox Company

Home | Insert | Page Layout | Formulas | Data | Review | View

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| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **Fox Company** | | | | | |
| 2 | **Monthly Manufacturing Overhead Flexible Budget** | | | | | |
| 3 | **Finishing Department** | | | | | |
| 4 | **For Months During the Year 2020** | | | | | |
| 5 | Activity level | | | | | |
| 6 | Direct labor hours | 8,000 | 9,000 | 10,000 | 11,000 | 12,000 |
| 7 | Variable costs | | | | | |
| 8 | Indirect materials ($1.50)[a] | $12,000[b] | $13,500 | $15,000 | $16,500 | $18,000 |
| 9 | Indirect labor ($2.00)[a] | 16,000[c] | 18,000 | 20,000 | 22,000 | 24,000 |
| 10 | Utilities ($0.50)[a] | 4,000[d] | 4,500 | 5,000 | 5,500 | 6,000 |
| 11 | Total variable costs | 32,000 | 36,000 | 40,000 | 44,000 | 48,000 |
| 12 | Fixed costs | | | | | |
| 13 | Depreciation | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 |
| 14 | Supervision | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| 15 | Property taxes | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| 16 | Total fixed costs | 30,000 | 30,000 | 30,000 | 30,000 | 30,000 |
| 17 | Total costs | $62,000 | $66,000 | $70,000 | $74,000 | $78,000 |
| 18 | | | | | | |
| 19 | [a]Cost per direct labor hour; [b]8,000 x $1.50; [c]8,000 x $2.00; [d]8,000 x $0.50 | | | | | |

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Fox uses the cost equation shown in Illustration 25.14 to determine total budgeted costs at any level of activity.

**ILLUSTRATION 25.14**
**Cost equation for total budgeted costs**

| Fixed Costs | + | Variable Costs* | = | Total Budgeted Costs |
|---|---|---|---|---|

*Total variable cost per unit of activity × Activity level.

For Fox, fixed costs are $30,000 per month, and total variable cost per direct labor hour is $4 ($1.50 + $2.00 + $0.50). At 9,000 direct labor hours, total budgeted costs are $66,000 [$30,000 + ($4 × 9,000)]. At 8,622 direct labor hours, total budgeted costs are $64,488 [$30,000 + ($4 × 8,622)] (see Helpful Hint).

Total budgeted costs can also be shown graphically, as in Illustration 25.15. In the graph, the horizontal axis represents the activity index, and costs are indicated on the vertical axis. The graph highlights two activity levels (10,000 and 12,000). As shown, total budgeted costs at these activity levels are $70,000 [$30,000 + ($4 × 10,000)] and $78,000 [$30,000 + ($4 × 12,000)], respectively.

**HELPFUL HINT**
Using the data given for Fox, the amount of total costs to be budgeted for 10,600 direct labor hours would be $30,000 fixed + $42,400 variable (10,600 × $4) = $72,400 total.

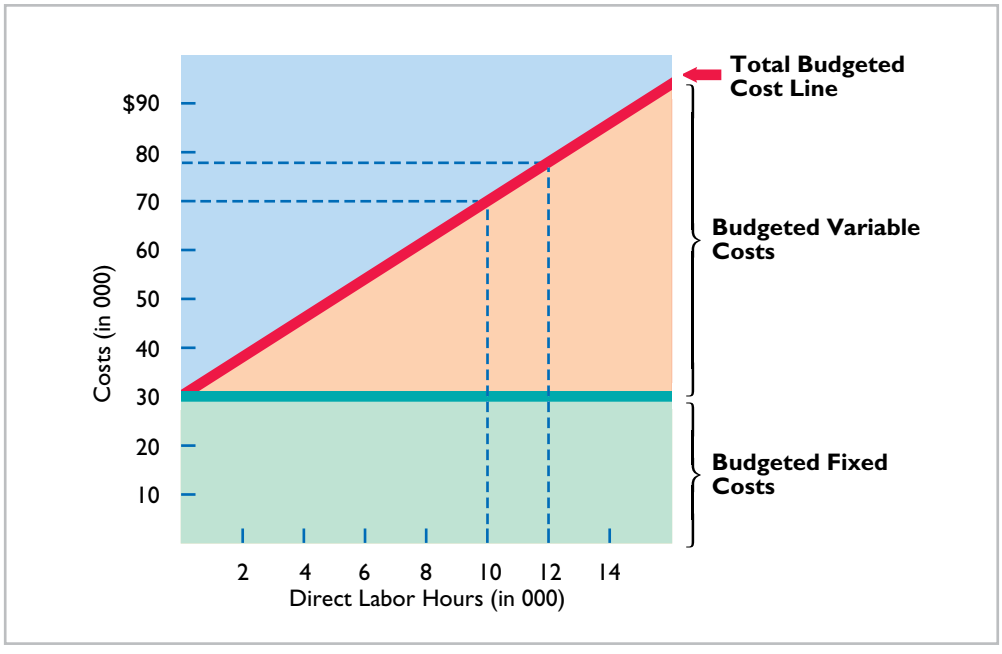


**ILLUSTRATION 25.15**
**Graphic flexible budget data highlighting 10,000 and 12,000 activity levels**

## Flexible Budget Reports

Flexible budget reports are another type of internal report. The flexible budget report consists of two sections: (1) production data for a selected activity index, such as direct labor hours, and (2) cost data for variable and fixed costs. The report provides a basis for evaluating a manager's performance in two areas: production control and cost control. Flexible budget reports are widely used in production and service departments.

Illustration 25.16 shows a flexible budget report for the Finishing Department of Fox Company for the month of January. In this month, 9,000 hours are worked. The budget data are therefore based on the flexible budget for 9,000 hours in Illustration 25.13. The actual cost data are assumed.

How appropriate is this report in evaluating the Finishing Department manager's performance in controlling overhead costs? The report clearly provides a reliable basis. Both actual and budget costs are based on the activity level worked during January. Since variable costs generally are incurred directly by the department, the difference between the budget allowance for those hours and the actual costs is the responsibility of the department manager.

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**ILLUSTRATION 25.16**
**Overhead flexible budget report**

Fox Company

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | **Fox Company** | | | | |
| 2 | **Manufacturing Overhead Flexible Budget Report** | | | | |
| 3 | **Finishing Department** | | | | |
| 4 | **For the Month Ended January 31, 2020** | | | | |
| 5 | | | | Difference | |
| 6 | | Budget at | Actual costs at | Favorable - F | |
| 7 | Direct labor hours (DLH) | 9,000 DLH | 9,000 DLH | Unfavorable - U | |
| 8 | | | | | |
| 9 | Variable costs | | | | |
| 10 | Indirect materials ($1.50)[a] | $13,500 | $14,000 | $ 500 | U |
| 11 | Indirect labor ($2.00)[a] | 18,000 | 17,000 | 1,000 | F |
| 12 | Utilities ($0.50)[a] | 4,500 | 4,600 | 100 | U |
| 13 | Total variable costs | 36,000 | 35,600 | 400 | F |
| 14 | | | | | |
| 15 | Fixed costs | | | | |
| 16 | Depreciation | 15,000 | 15,000 | 0 | |
| 17 | Supervision | 10,000 | 10,000 | 0 | |
| 18 | Property taxes | 5,000 | 5,000 | 0 | |
| 19 | Total fixed costs | 30,000 | 30,000 | 0 | |
| 20 | Total costs | $66,000 | $65,600 | $ 400 | F |
| 21 | | | | | |
| 22 | [a]Cost per direct labor hour | | | | |

In subsequent months, Fox Company will prepare other flexible budget reports. For each month, the budget data are based on the actual activity level attained. In February that level may be 11,000 direct labor hours, in July 10,000, and so on.

Note that this flexible budget is based on a single cost driver. A more accurate budget often can be developed using activity-based costing concepts.

## Service Company Insight San Diego Zoo

Eric Isselée/iStockphoto

### Budgets and the Exotic Newcastle Disease

Exotic Newcastle Disease, one of the most infectious bird diseases in the world, kills so swiftly that many victims die before any symptoms appear. When it broke out in Southern California, it could have spelled disaster for the **San Diego Zoo**. "We have one of the most valuable collections of birds in the world, if not *the* most valuable," says Paula Brock, CFO of the Zoological Society of San Diego, which operates the zoo.

Bird exhibits were closed to the public for several months (the disease, which is harmless to humans, can be carried on clothes and shoes). The tires of arriving delivery trucks were sanitized, as were the shoes of anyone visiting the zoo's nonpublic areas. Zookeeper uniforms had to be changed and cleaned daily. And ultimately, the zoo, with $150 million in revenues, spent almost half a million dollars on quarantine measures.

It worked: No birds got sick. Better yet, the damage to the rest of the zoo's budget was minimized by another protective measure: the monthly budget reforecast. "When we get a hit like this, we still have to find a way to make our bottom line," says Brock. Thanks to a new planning process Brock had introduced a year earlier, the zoo's scientists were able to raise the financial alarm as they redirected resources to ward off the disease. "Because we had timely awareness," she says, "we were able to make adjustments to weather the storm."

**Source:** Tim Reason, "Budgeting in the Real World," *CFO Magazine* (July 12, 2005), *www.cfodirect.com/cfopublic.nsf/vContentPrint/649A82C8FF8AB06B85257037004* (accessed July 2005).

**What is the major benefit of tying a budget to the overall goals of the company? (Go to WileyPLUS for this answer and additional questions.)**

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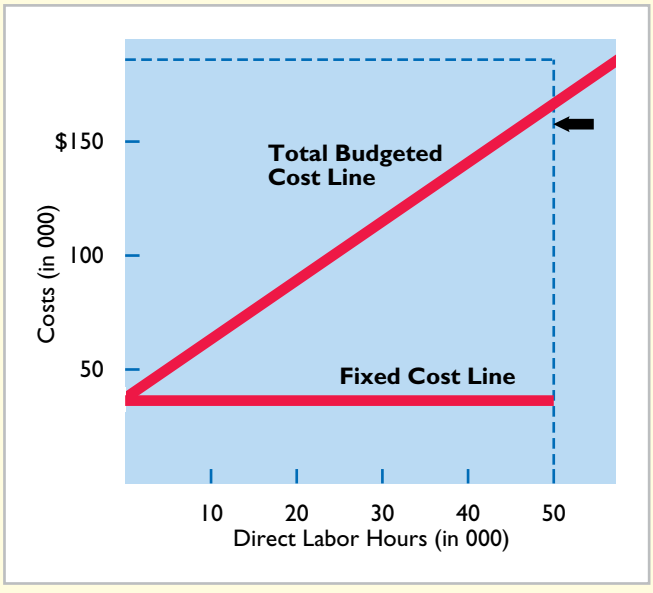
### DO IT! 2 | Flexible Budgets

In Strassel Company's flexible budget graph, the fixed cost line and the total budgeted cost line intersect the vertical axis at $36,000. The total budgeted cost line is $186,000 at an activity level of 50,000 direct labor hours. Compute total budgeted costs at 30,000 direct labor hours.

**ACTION PLAN**

- Apply the formula: Fixed costs + Variable costs (Total variable cost per unit × Activity level) = Total budgeted costs.




**Solution**

Using the graph, fixed costs are $36,000, and variable costs are $3 per direct labor hour [($186,000 − $36,000) ÷ 50,000]. Thus, at 30,000 direct labor hours, total budgeted costs are $126,000 [$36,000 + ($3 × 30,000)].

Related exercise material: **BE25.4, DO IT! 25.2, E25.3, and E25.5.**

# Responsibility Accounting and Responsibility Centers

**LEARNING OBJECTIVE 3**

Apply responsibility accounting to cost and profit centers.

Like budgeting, responsibility accounting is an important part of management accounting. **Responsibility accounting** involves identifying and reporting costs (and revenues, where relevant) on the basis of the manager who has the authority to make the day-to-day decisions about the items. Under responsibility accounting, a manager's performance is evaluated on matters directly under that manager's control. Responsibility accounting can be used at every level of management in which the following conditions exist.

1. Costs and revenues can be directly associated with the specific level of management responsibility.

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2. The costs and revenues can be controlled by employees at the level of responsibility with which they are associated.
3. Budget data can be developed for evaluating the manager's effectiveness in controlling the costs and revenues.

**Illustration 25.17** depicts levels of responsibility for controlling costs.

**ILLUSTRATION 25.17**
**Responsibility for controllable costs at varying levels of management**

WI Cheese Company
"I'm responsible for controlling costs in my department."
"I'm responsible for controlling costs in my division."
"The big cheese"
"I'm responsible for controlling company costs."
Department Manager
Division Manager
President
**Responsibility accounting gives managers responsibility for controllable costs at each level of authority**

**HELPFUL HINT**
**All companies use responsibility accounting. Without some form of responsibility accounting, there would be chaos in discharging management's control function.**

Under responsibility accounting, any individual who controls a specified set of activities can be a responsibility center. Thus, responsibility accounting may extend from the lowest level of control to the top strata of management. Once responsibility is established, the company first measures and reports the effectiveness of the individual's performance for the specified activity. It then reports that measure upward throughout the organization (see **Helpful Hint**).

Responsibility accounting is especially valuable in a decentralized company. **Decentralization** means that the control of operations is delegated to many managers throughout the organization. The term **segment** (or **division**) is sometimes used to identify an area of responsibility in decentralized operations. Under responsibility accounting, companies prepare segment reports periodically, such as monthly, quarterly, and annually, to evaluate managers' performance.

Responsibility accounting is an essential part of any effective system of budgetary control. The reporting of costs and revenues under responsibility accounting differs from budgeting in two respects:

1. A distinction is made between controllable and noncontrollable items.
2. Performance reports either emphasize or include only items controllable by the individual manager.

Responsibility accounting applies to both profit and not-for-profit entities. For-profit entities seek to maximize net income. Not-for-profit entities wish to provide services as efficiently as possible.

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**Management Insight** Procter & Gamble

Khuong Hoang/iStockphoto

### Competition versus Collaboration

Many compensation and promotion programs encourage competition among employees for pay raises. To get ahead, you have to perform better than your fellow employees. While this may encourage hard work, it does not foster collaboration, and it can lead to distrust and disloyalty. Such negative effects have led some companies to believe that cooperation and collaboration, not competition, are essential in order to succeed in today's work environment.

As a consequence, many companies explicitly include measures of collaboration in their performance measures. For example, **Procter & Gamble** measures collaboration in employees' annual performance reviews. At **Cisco Systems**, the assessment of an employee's teamwork can affect the annual bonus by as much as 20%. A recent concern is that employees have become swamped in a confusing array of collaboration tools from Box Inc., Slack Technologies, Microsoft, Alphabet, and Facebook. In response, companies are trying to simplify the collaboration process.

**Sources:** Carol Hymowitz, "Rewarding Competitors Over Collaboration No Longer Makes Sense," *Wall Street Journal* (February 13, 2006); and Jay Greene, "Beware Collaboration—Tool Overload," *Wall Street Journal* (March 12, 2017).

**How might managers of separate divisions be able to reduce division costs through collaboration? (Go to WileyPLUS for this answer and additional questions.)**

# Controllable versus Noncontrollable Revenues and Costs

All costs and revenues are controllable at some level of responsibility within a company. This truth underscores the adage by the CEO of any organization that "the buck stops here" (see **Helpful Hint**). Under responsibility accounting, the critical issue is **whether the cost or revenue is controllable at the level of responsibility with which it is associated**. A cost over which a manager has control is called a **controllable cost**. From this definition, it follows that:

1. All costs are controllable by top management because of the broad range of its authority.
2. Fewer costs are controllable as one moves down to each lower level of managerial responsibility because of the manager's decreasing authority.

**HELPFUL HINT**

**There are more, not fewer, controllable costs as you move to higher levels of management.**

In general, **costs incurred directly by a level of responsibility are controllable at that level** (see **Helpful Hint**). In contrast, costs incurred indirectly and allocated to a responsibility level are **noncontrollable costs** at that level.

**HELPFUL HINT**

**The longer the time span, the more likely that the cost becomes controllable.**

# Principles of Performance Evaluation

Performance evaluation is at the center of responsibility accounting. It is a management function that compares actual results with budget goals. It involves both behavioral and reporting principles.

## Management by Exception

**Management by exception** means that top management's review of a budget report is focused either entirely or primarily on significant differences between actual results and planned objectives. This approach enables top management to focus on problem areas. For example, many companies now use online reporting systems for employees to file their travel and entertainment expense reports. In addition to cutting reporting time in half, the online system enables managers to quickly analyze variances from travel budgets. This cuts down on expense account "padding" such as spending too much on meals or falsifying documents for costs that were never actually incurred.

As noted above, under management by exception, top management does not investigate every difference. For this approach to be effective, there must be guidelines for identifying which differences to investigate. The usual criteria are materiality and controllability.

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**Materiality.** Without quantitative guidelines, management would have to investigate every budget difference regardless of the amount. Materiality is usually expressed as a percentage difference from budget. For example, management may set the percentage difference at 5% for important items and 10% for other items. Managers will investigate all differences either over or under budget by the specified percentage. Costs over budget warrant investigation to determine why they were not controlled. Likewise, costs under budget merit investigation to determine whether costs critical to profitability are being curtailed. For example, if maintenance costs are budgeted at $80,000 but only $40,000 is spent, major unexpected breakdowns in productive facilities may occur in the future. Alternatively, as discussed in Chapter 24, cost might be under budget due to budgetary slack.

Alternatively, a company may specify a single percentage difference from budget for all items and supplement this guideline with a minimum dollar limit. For example, the exception criteria may be stated at 5% of budget or more than $10,000.

**Controllability of the Item.** Exception guidelines are more restrictive for controllable items than for items the manager cannot control. In fact, there may be no guidelines for noncontrollable items. For example, a large unfavorable difference between actual and budgeted property tax expense may not be flagged for investigation because the only possible causes are an unexpected increase in the tax rate or in the assessed value of the property. An investigation into the difference would be useless: The manager cannot control either cause.

## Behavioral Principles

The human factor is critical in evaluating performance. Behavioral principles include the following.

1. **Managers of responsibility centers should have direct input into the process of establishing budget goals of their area of responsibility.** Without such input, managers may view the goals as unrealistic or arbitrarily set by top management. Such views adversely affect the managers' motivation to meet the targeted objectives.
2. **The evaluation of performance should be based entirely on matters that are controllable by the manager being evaluated.** Criticism of a manager on matters outside his or her control reduces the effectiveness of the evaluation process. It leads to negative reactions by a manager and to doubts about the fairness of the company's evaluation policies.
3. **Top management should support the evaluation process.** As explained earlier, the evaluation process begins at the lowest level of responsibility and extends upward to the highest level of management. Managers quickly lose faith in the process when top management ignores, overrules, or bypasses established procedures for evaluating a manager's performance.
4. **The evaluation process must allow managers to respond to their evaluations.** Evaluation is not a one-way street. Managers should have the opportunity to defend their performance. Evaluation without feedback is both impersonal and ineffective.
5. **The evaluation should identify both good and poor performance.** Praise for good performance is a powerful motivating factor for a manager. This is especially true when a manager's compensation includes rewards for meeting budget goals.

## Reporting Principles

Performance evaluation under responsibility accounting should be based on certain reporting principles. These principles pertain primarily to the internal reports that provide the basis for evaluating performance. Performance reports should:

1. Contain only data that are controllable by the manager of the responsibility center.
2. Provide accurate and reliable budget data to measure performance.
3. Highlight significant differences between actual results and budget goals.
4. Be tailor-made for the intended evaluation by ensuring only controllable costs are included.
5. Be prepared at reasonable time intervals.

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In recent years, companies have come under increasing pressure from influential shareholder groups to do a better job of linking executive pay to corporate performance. For example, software maker **Siebel Systems** unveiled an incentive plan after lengthy discussions with the California Public Employees' Retirement System. One unique feature of the plan is that managers' targets will be publicly disclosed at the beginning of each year for investors to evaluate.

**Management Insight** Honda

Kyodo/©AP/Wide World Photos

### Flexible Manufacturing Requires Flexible Accounting

Flexible budgeting is useful because it enables managers to evaluate performance in light of changing conditions. But the ability to react quickly to changing conditions is even more important. Among automobile manufacturing facilities in the U.S., few plants are more flexible than **Honda**.

The manufacturing facilities of some auto companies can make slight alterations to the features of a vehicle in response to changes in demand for particular features. But for most plants, to switch from production of one type of vehicle to a completely different one typically takes months and costs hundreds of millions of dollars. At the Honda plant, however, the switch takes minutes. For example, it takes about five minutes to install different hand-like parts on the robots so they can switch from making Civic compacts to the longer, taller CR-V crossover. This ability to adjust quickly to changing demand gave Honda a huge advantage when gas prices surged and demand for more fuel-efficient cars increased quickly.

**Source:** Kate Linebaugh, "Honda's Flexible Plants Provide Edge," *Wall Street Journal Online* (September 23, 2008).

**What implications do these improvements in production capabilities have for management accounting information and performance evaluation within the organization? (Go to WileyPLUS for this answer and additional questions.)**

## Responsibility Reporting System

A **responsibility reporting system** involves the preparation of a report for each level of responsibility in the company's organization chart. To illustrate such a system, we use the partial organization chart and production departments of Francis Chair Company in **Illustration 25.18**.

The responsibility reporting system begins with the lowest level of responsibility for controlling costs and moves upward to each higher level. **Illustration 25.19** details the connections between levels.

A brief description of the four reports for Francis Chair is as follows.

1. **Report D** is typical of reports that go to department managers. Similar reports are prepared for the managers of the Assembly and Enameling Departments.
2. **Report C** is an example of reports that are sent to plant managers. It shows the costs of the Chicago plant that are controllable at the second level of responsibility. In addition, Report C shows summary data for each department that is controlled by the plant manager. Similar reports are prepared for the Detroit and St. Louis plant managers.
3. **Report B** illustrates the reports at the third level of responsibility. It shows the controllable costs of the vice president of production and summary data on the three assembly plants for which this officer is responsible. Similar reports are prepared for the vice presidents of sales and finance.
4. **Report A** is typical of reports that go to the top level of responsibility—the president. It shows the controllable costs and expenses of this office and summary data on the vice presidents that are accountable to the president.

A responsibility reporting system permits management by exception at each level of responsibility. And, each higher level of responsibility can obtain the detailed report for each lower level of responsibility. For example, the vice president of production in Francis Chair may request the Chicago plant manager's report because this plant is $5,300 over budget.

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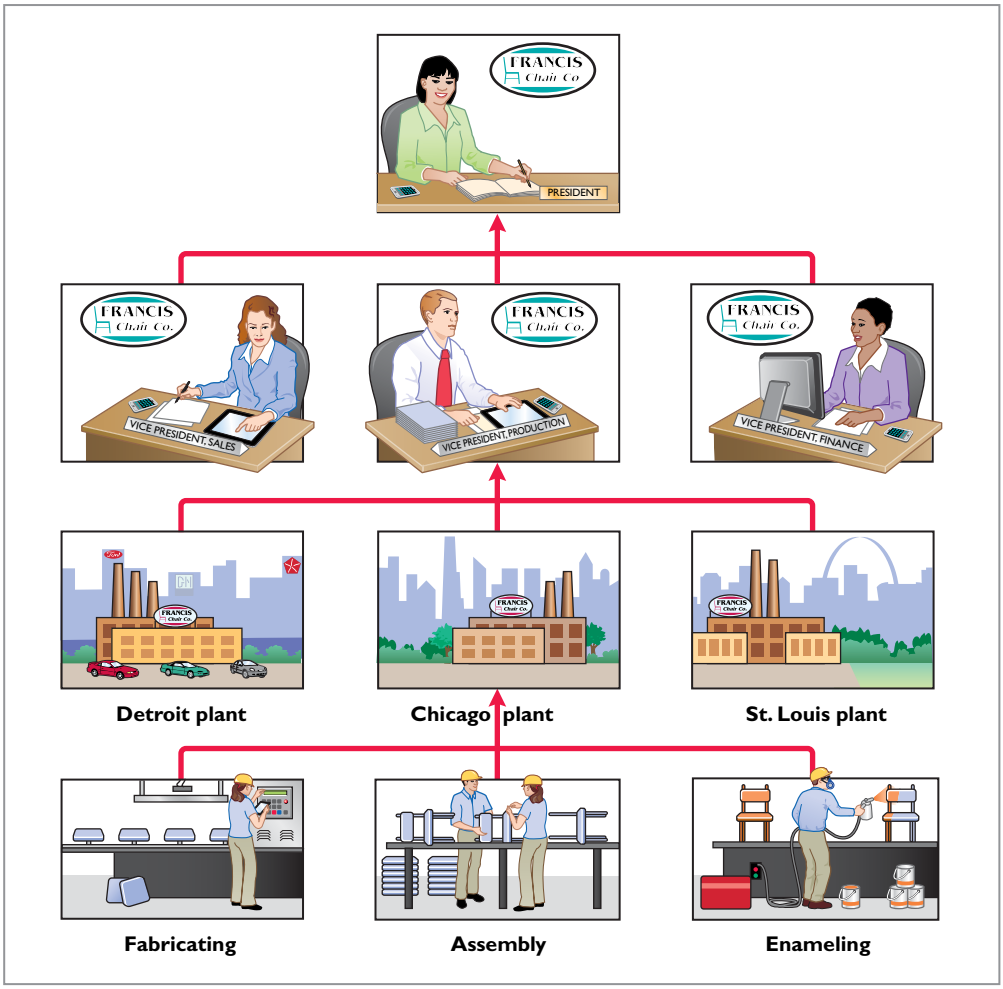
**ILLUSTRATION 25.18** **Partial organization chart**




**Report A**
President sees summary data of vice presidents.

**Report B**
Vice president sees summary of controllable costs in his/her functional area.

**Report C**
Plant manager sees summary of controllable costs for each department in the plant.

**Report D**
Department manager sees controllable costs of his/her department.

This type of reporting system also permits comparative evaluations. In Illustration 25.19, the Chicago plant manager can easily rank the department managers' effectiveness in controlling manufacturing costs. Comparative rankings provide further incentive for a manager to control costs.

## Types of Responsibility Centers

There are three basic types of responsibility centers: cost centers, profit centers, and investment centers. These classifications indicate the degree of responsibility the manager has for the performance of the center.

A **cost center** incurs costs (and expenses) but does not directly generate revenues. Managers of cost centers have the authority to incur costs. They are evaluated on their ability to control costs. **Cost centers are usually either production departments or service departments.** Production departments participate directly in making the product. Service departments provide only support services. In a **Ford Motor Company** automobile plant, the welding, painting, and assembling departments are production departments. Ford's maintenance, cafeteria, and human resources departments are service departments. All of them are cost centers.

**HELPFUL HINT**
**The jewelry department of Macy's department store is a profit center, while the makeup department of a movie studio is a cost center.**

A **profit center** incurs costs (and expenses) and also generates revenues. Managers of profit centers are judged on the profitability of their centers. Examples of profit centers include the individual departments of a retail store, such as clothing, furniture, and automotive products, and branch offices of banks (see **Helpful Hint**).

Like a profit center, an **investment center** incurs costs (and expenses) and generates revenues. In addition, an investment center has control over decisions regarding the assets

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**ILLUSTRATION 25.19** **Responsibility reporting system**

**Report A**
President sees summary data of vice presidents.

Report A

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | **Report A** | | | |
| 3 | To President | | | Month: January | |
| 4 | Controllable Costs: | Budget | Actual | Fav/Unfav | |
| 5 | President | $ 150,000 | $ 151,500 | $ 1,500 | U |
| 6 | Vice Presidents: | | | | |
| 7 | Sales | 185,000 | 187,000 | 2,000 | U |
| 8 | Production | 1,179,000 | 1,186,300 | 7,300 | U |
| 9 | Finance | 100,000 | 101,000 | 1,000 | U |
| 10 | Total | $1,614,000 | $1,625,800 | $11,800 | U |
| 11 | | | | | |

**Report B**
Vice president sees summary of controllable costs in his/her functional area.

Report B

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | **Report B** | | | |
| 3 | To Vice President Production | | | Month: January | |
| 4 | Controllable Costs: | Budget | Actual | Fav/Unfav | |
| 5 | VP Production | $ 125,000 | $ 126,000 | $ 1,000 | U |
| 6 | Assembly Plants: | | | | |
| 7 | Detroit | 420,000 | 418,000 | 2,000 | F |
| 8 | Chicago | 304,000 | 309,300 | 5,300 | U |
| 9 | St. Louis | 330,000 | 333,000 | 3,000 | U |
| 10 | Total | $1,179,000 | $1,186,300 | $ 7,300 | U |
| 11 | | | | | |

**Report C**
Plant manager sees summary of controllable costs for each department in the plant.

Report C

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | **Report C** | | | |
| 3 | To Plant Manager-Chicago | | | Month: January | |
| 4 | Controllable Costs: | Budget | Actual | Fav/Unfav | |
| 5 | Chicago Plant | $110,000 | $113,000 | $3,000 | U |
| 6 | Departments: | | | | |
| 7 | Fabricating | 84,000 | 85,300 | 1,300 | U |
| 8 | Enameling | 62,000 | 64,000 | 2,000 | U |
| 9 | Assembly | 48,000 | 47,000 | 1,000 | F |
| 10 | Total | $304,000 | $309,300 | $5,300 | U |
| 11 | | | | | |

**Report D**
Department manager sees controllable costs of his/her department.

Report D

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | **Report D** | | | |
| 3 | To Fabricating Dept. Manager | | | Month: January | |
| 4 | Controllable Costs: | Budget | Actual | Fav/Unfav | |
| 5 | Direct Materials | $20,000 | $20,500 | $ 500 | U |
| 6 | Direct Labor | 40,000 | 41,000 | 1,000 | U |
| 7 | Overhead | 24,000 | 23,800 | 200 | F |
| 8 | Total | $84,000 | $85,300 | $1,300 | U |
| 9 | | | | | |

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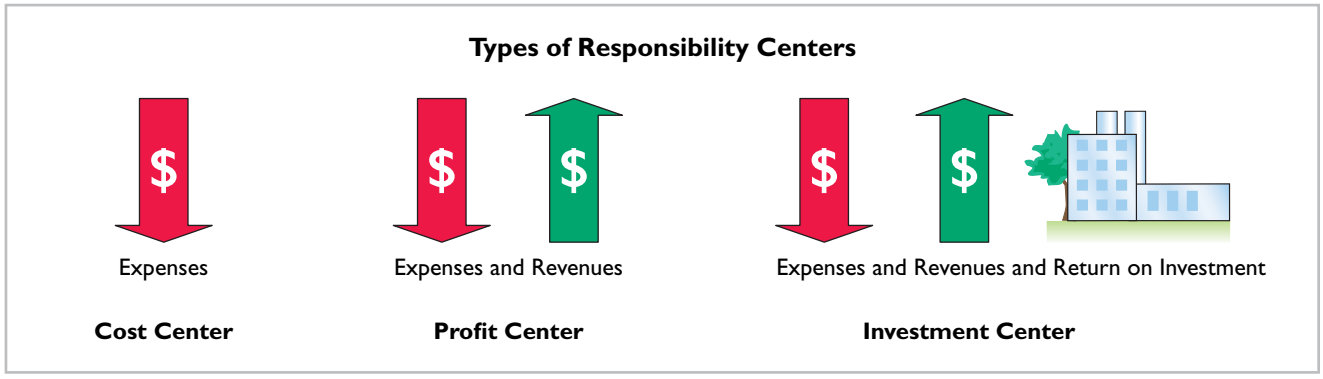
available for use. Investment center managers are evaluated on both the profitability of the center and the rate of return earned on the assets used. Investment centers are often associated with subsidiary companies. Utility **Duke Energy** has operating divisions such as electric utility, energy trading, and natural gas. Investment center managers control or significantly influence investment decisions related to such matters as plant expansion and entry into new market areas. **Illustration 25.20** depicts the three types of responsibility centers.

**ILLUSTRATION 25.20** **Types of responsibility centers**




## Responsibility Accounting for Cost Centers

The evaluation of a manager's performance for cost centers is based on his or her ability to meet budgeted goals for controllable costs. **Responsibility reports for cost centers compare actual controllable costs with flexible budget data.**

**Illustration 25.21** shows a responsibility report. The report is adapted from the flexible budget report for Fox Company in Illustration 25.16. It assumes that the Finishing Department manager is able to control all manufacturing overhead costs except depreciation, property taxes, and his own monthly salary of $6,000. The remaining $4,000 ($10,000 − $6,000) of supervision costs are assumed to apply to other supervisory personnel within the Finishing Department, whose salaries are controllable by the manager.

**ILLUSTRATION 25.21**
**Responsibility report for a cost center**

Fox Company

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | **Fox Company** | | | |
| 3 | | **Finishing Department** | | | |
| 4 | | **Responsibility Report** | | | |
| 5 | | **For the Month Ended January 31, 2020** | | | |
| 6 | | | | Difference | |
| | Controllable Costs | Budget | Actual | Favorable - F Unfavorable - U | |
| 7 | Indirect materials | $13,500 | $14,000 | $ 500 | U |
| 8 | Indirect labor | 18,000 | 17,000 | 1,000 | F |
| 9 | Utilities | 4,500 | 4,600 | 100 | U |
| 10 | Supervision | 4,000 | 4,000 | 0 | |
| 11 | Total | $40,000 | $39,600 | $ 400 | F |
| 12 | | | | | |

The report in Illustration 25.21 includes **only controllable costs**, and no distinction is made between variable and fixed costs. The responsibility report continues the concept of management by exception. In this case, top management may request an explanation of the $1,000 favorable difference in indirect labor and/or the $500 unfavorable difference in indirect materials if considered significant.

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## Responsibility Accounting for Profit Centers

To evaluate the performance of a profit center manager, upper management needs detailed information about both controllable revenues and controllable costs. The operating revenues earned by a profit center, such as sales, are controllable by the manager. All variable costs (and expenses) incurred by the center are also controllable by the manager because they vary with sales. However, to determine the controllability of fixed costs, it is necessary to distinguish between direct and indirect fixed costs.

**Direct and Indirect Fixed Costs.** A profit center may have both direct and indirect fixed costs. **Direct fixed costs** relate specifically to one center and are incurred for the sole benefit of that center. Examples of such costs include the salaries established by the profit center manager for supervisory personnel and the cost of a timekeeping department for the center's employees. Since these fixed costs can be traced directly to a center, they are also called **traceable costs**. **Most direct fixed costs are controllable by the profit center manager.**

In contrast, **indirect fixed costs** pertain to a company's overall operating activities and are incurred for the benefit of more than one profit center. Management allocates indirect fixed costs to profit centers on some type of equitable basis. For example, property taxes on a building occupied by more than one center may be allocated on the basis of square feet of floor space used by each center. Or, the costs of a company's human resources department may be allocated to profit centers on the basis of the number of employees in each center. Because these fixed costs apply to more than one center, they are also called **common costs**. **Most indirect fixed costs are not controllable by the profit center manager.**

**Responsibility Report.** The responsibility report for a profit center shows budgeted and actual **controllable revenues and costs**. The report is prepared using the cost-volume-profit income statement explained in Chapter 22 (see **Helpful Hint**). In the report:

1. Controllable fixed costs are deducted from contribution margin.
2. The excess of contribution margin over controllable fixed costs is identified as **controllable margin**.
3. Noncontrollable fixed costs are not reported.

**Illustration 25.22** shows the responsibility report for the manager of the Marine Division, a profit center of Mantle Company. For the year, the Marine Division also had $60,000 of indirect fixed costs that were not controllable by the profit center manager and therefore were omitted from the report.

**HELPFUL HINT**

Recognize that we are emphasizing *financial* measures of performance. Companies are now making an effort to also stress *nonfinancial* performance measures such as product quality, labor productivity, market growth, materials' yield, manufacturing flexibility, and technological capability.

**ILLUSTRATION 25.22**

**Responsibility report for profit center**

Mantle Company

Home | Insert | Page Layout | Formulas | Data | Review | View

P18

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | **Mantle Company** | | | |
| 3 | | **Marine Division** | | | |
| 4 | | **Responsibility Report** | | | |
| 5 | | **For the Year Ended December 31, 2020** | | | |
| 6 | | Budget | Actual | Difference Favorable - F Unfavorable - U | |
| 7 | Sales | $1,200,000 | $1,150,000 | $50,000 | U |
| 8 | Variable costs | | | | |
| 9 | Cost of goods sold | 500,000 | 490,000 | 10,000 | F |
| 10 | Selling and administrative | 160,000 | 156,000 | 4,000 | F |
| 11 | Total | 660,000 | 646,000 | 14,000 | F |
| 12 | Contribution margin | 540,000 | 504,000 | 36,000 | U |
| 13 | Controllable fixed costs | | | | |
| 14 | Cost of goods sold | 100,000 | 100,000 | 0 | |
| 15 | Selling and administrative | 80,000 | 80,000 | 0 | |
| 16 | Total | 180,000 | 180,000 | 0 | |
| 17 | Controllable margin | $ 360,000 | $ 324,000 | $36,000 | U |
| 18 | | | | | |

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Controllable margin is considered to be the best measure of the manager's performance **in controlling revenues and costs**. The report in Illustration 25.22 shows that the manager's performance was below budgeted expectations by 10% ($36,000 ÷ $360,000) of the budgeted controllable margin. Top management would likely investigate the causes of this unfavorable result. Note that the report does not show the Marine Division's noncontrollable indirect fixed costs of $60,000. These costs would be included in a report on the profitability of the profit center.

Management also may choose to see **monthly** responsibility reports for profit centers. In addition, responsibility reports may include cumulative year-to-date results.

## DO IT! 3 | Profit Center Responsibility Report

Midwest Division operates as a profit center. It reports the following for the year:

| | Budget | Actual |
|---|---|---|
| Sales | $1,500,000 | $1,700,000 |
| Variable costs | 700,000 | 800,000 |
| Controllable fixed costs | 400,000 | 400,000 |
| Noncontrollable fixed costs | 200,000 | 200,000 |

Prepare a responsibility report for the Midwest Division for December 31, 2020.

**ACTION PLAN**

- Deduct variable costs from sales to show contribution margin.
- Deduct controllable fixed costs from the contribution margin to show controllable margin.
- Do not report noncontrollable fixed costs.

### Solution

Midwest Division Responsibility Report

Home Insert Page Layout Formulas Data Review View

P18 fx

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | Midwest Division | | | | |
| 2 | Responsibility Report | | | | |
| 3 | For the Year Ended December 31, 2020 | | | | |
| 4 | | | | Difference | |
| 5 | | Budget | Actual | Favorable F Unfavorable U | |
| 6 | Sales | $1,500,000 | $1,700,000 | $200,000 | F |
| 7 | Variable costs | 700,000 | 800,000 | 100,000 | U |
| 8 | Contribution margin | 800,000 | 900,000 | 100,000 | F |
| 9 | Controllable fixed costs | 400,000 | 400,000 | 0 | |
| 10 | Controllable margin | $ 400,000 | $ 500,000 | $100,000 | F |
| 11 | | | | | |

Related exercise material: **BE25.7, DO IT! 25.3, and E25.15.**

# Investment Centers

**LEARNING OBJECTIVE 4**

Evaluate performance in investment centers.

As explained earlier, an investment center manager can control or significantly influence the investment funds available for use. Thus, the primary basis for evaluating the performance of a manager of an investment center is **return on investment (ROI)**. The return on investment is considered to be a useful performance measurement because it shows the **effectiveness of the manager in utilizing the assets at his or her disposal**.

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# Return on Investment (ROI)

The formula for computing ROI for an investment center, together with assumed illustrative data, is shown in **Illustration 25.23**.

**ILLUSTRATION 25.23**
**ROI formula**

| Controllable Margin | ÷ | Average Operating Assets | = | Return on Investment (ROI) |
|---|---|---|---|---|
| $1,000,000 | ÷ | $5,000,000 | = | 20% |

Both factors in the formula are controllable by the investment center manager. Operating assets consist of current assets and plant assets used in operations by the center and controlled by the manager. Nonoperating assets such as idle plant assets and land held for future use are excluded. Average operating assets are usually based on the cost or book value of the assets at the beginning and end of the year. Based on these assigned values, the ROI of 20% indicates that, on average, the segment generates 20 cents of profit for every dollar invested in assets.

# Responsibility Report

The scope of the investment center manager's responsibility significantly affects the content of the performance report. Since an investment center is an independent entity for operating purposes, **all fixed costs are controllable by its manager**. For example, the manager is responsible for depreciation on investment center assets. Therefore, more fixed costs are identified as controllable in the performance report for an investment center manager than in a performance report for a profit center manager. The report also shows budgeted and actual ROI below controllable margin.

To illustrate this responsibility report, we will now assume that the Marine Division of Mantle Company is an investment center. It has budgeted and actual average operating assets of $2,000,000. The manager can control $60,000 of additional fixed costs that were not controllable when the division was a profit center. **Illustration 25.24** shows the division's responsibility report.

**ILLUSTRATION 25.24**
**Responsibility report for investment center**

Mantle Company

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | **Mantle Company** | | | | |
| 3 | **Marine Division** | | | | |
| 4 | **Responsibility Report** | | | | |
| 5 | **For the Year Ended December 31, 2020** | | | Difference | |
| 6 | | Budget | Actual | Favorable - F Unfavorable - U | |
| 7 | Sales | $ 1,200,000 | $ 1,150,000 | $ 50,000 | U |
| 8 | Variable costs | | | | |
| 9 | Cost of goods sold | 500,000 | 490,000 | 10,000 | F |
| 10 | Selling and administrative | 160,000 | 156,000 | 4,000 | F |
| 11 | Total | 660,000 | 646,000 | 14,000 | F |
| 12 | Contribution margin | 540,000 | 504,000 | 36,000 | U |
| 13 | Controllable fixed costs | | | | |
| 14 | Cost of goods sold | 100,000 | 100,000 | 0 | |
| 15 | Selling and administrative | 80,000 | 80,000 | 0 | |
| 16 | Other fixed costs | 60,000 | 60,000 | 0 | |
| 17 | Total | 240,000 | 240,000 | 0 | |
| 18 | Controllable margin | $ 300,000 | $ 264,000 | $ 36,000 | U |
| 19 | Return on investment | 15.0% | 13.2% | 1.8% | U |
| 20 | | (a) | (b) | (c) | |
| 21 | | | | | |
| 22 | | (a) $ 300,000 / $ 2,000,000 | (b) $ 264,000 / $ 2,000,000 | (c) $ 36,000 / $ 2,000,000 | |
| 23 | | | | | |

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The report shows that the manager's performance based on ROI was below budget expectations by 1.8% (15.0% versus 13.2%). Top management would likely want explanations for this unfavorable result.

## Judgmental Factors in ROI

The return on investment approach includes two judgmental factors:

1. **Valuation of operating assets.** Operating assets may be valued at acquisition cost, book value, appraised value, or fair value. The first two bases are readily available from the accounting records.
2. **Margin (income) measure.** This measure may be controllable margin, income from operations, or net income.

Each of the alternative values for operating assets can provide a reliable basis for evaluating a manager's performance as long as it is consistently applied between reporting periods. However, the use of income measures other than controllable margin will not result in a valid basis for evaluating the performance of an investment center manager.

## Improving ROI

The manager of an investment center can improve ROI by increasing controllable margin, and/or reducing average operating assets. To illustrate, we use the assumed data for the Laser Division of Berra Company shown in **Illustration 25.25**.

**ILLUSTRATION 25.25**
**Assumed data for Laser Division**

| | |
|---|---|
| Sales | $2,000,000 |
| Variable costs | 1,100,000 |
| Contribution margin (45%) | 900,000 |
| Controllable fixed costs | 300,000 |
| Controllable margin (a) | $ 600,000 |
| Average operating assets (b) | $5,000,000 |
| Return on investment (a) ÷ (b) | 12% |

### Increasing Controllable Margin

Controllable margin can be increased by increasing sales or by reducing variable and controllable fixed costs as follows.

1. **Increase sales 10%.** Sales will increase $200,000 ($2,000,000 × .10). Assuming no change in the contribution margin percentage of 45% ($900,000 ÷ $2,000,000), contribution margin will increase $90,000 ($200,000 × .45). Controllable margin will increase by the same amount because controllable fixed costs will not change. Thus, controllable margin becomes $690,000 ($600,000 + $90,000). The new ROI is 13.8%, computed as shown in **Illustration 25.26**.

**ILLUSTRATION 25.26**
**ROI computation—increase in sales**

$$\text{ROI} = \frac{\text{Controllable margin}}{\text{Average operating assets}} = \frac{\$690{,}000}{\$5{,}000{,}000} = 13.8\%$$

An increase in sales benefits both the investment center and the company if it results in new business. It would not benefit the company if the increase was achieved at the expense of other investment centers.

2. **Decrease variable and fixed costs 10%.** Total costs decrease $140,000 [($1,100,000 + $300,000) × .10]. This reduction results in a corresponding increase in controllable margin. Thus, controllable margin becomes $740,000 ($600,000 + $140,000). The new ROI is 14.8%, computed as shown in **Illustration 25.27**.

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$$\text{ROI} = \frac{\text{Controllable margin}}{\text{Average operating assets}} = \frac{\$740{,}000}{\$5{,}000{,}000} = \mathbf{14.8\%}$$

**ILLUSTRATION 25.27**
**ROI computation—decrease in costs**

This course of action is clearly beneficial when the reduction in costs is the result of eliminating waste and inefficiency. But, a reduction in costs that results from cutting expenditures on vital activities, such as required maintenance and inspections, is not likely to be acceptable to top management.

## Reducing Average Operating Assets

Assume that average operating assets are reduced 10% or $500,000 ($5,000,000 × .10). Average operating assets become $4,500,000 ($5,000,000 – $500,000). Since controllable margin remains unchanged at $600,000, the new ROI is 13.3%, computed as shown in **Illustration 25.28**.

$$\text{ROI} = \frac{\text{Controllable margin}}{\text{Average operating assets}} = \frac{\$600{,}000}{\$4{,}500{,}000} = \mathbf{13.3\%}$$

**ILLUSTRATION 25.28**
**ROI computation—decrease in operating assets**

Reductions in operating assets may or may not be prudent. It is beneficial to eliminate overinvestment in inventories and to dispose of excessive plant assets. However, it is unwise to reduce inventories below expected needs or to dispose of essential plant assets.

## Management Insight

PeopleImages/Getty Images

### Is Your Job a Game?

As discussed in this chapter, the things you are held accountable for depend on your job responsibilities. Similarly, the form of a company's incentive and compensation structure varies depending on your level within the organization. If you are the chief executive officer (CEO), it is likely that a significant portion of your pay (about 30%) will be in the form of a stock-based bonus. This bonus is usually tied to overall company performance, typically measured by earnings per share and shareholder returns. But if you are a lower-level employee, your raises and bonuses might be structured similar to the incentives in video games. This so-called "gamification" has the ability to incentivize not just the most obvious aspect of your job but also many of the other functions that your manager deems important. For example, rather than just reward you for total sales made, your bonus under gamification might change if you "accurately enter their client's information into a sales tracker, assess the quality of sales leads or track how often they are going to sales meetings." It can also provide "points" for things like whether you lead a healthy lifestyle, collaborate with co-workers, and improve interpersonal skills.

**Sources:** Scott Thurm, "CEO Pay More Closely Matches Firms' Results," *Wall Street Journal* (September 11, 2013); and Farhad ManJoo, "The Gamification of the Office Approaches," *Wall Street Journal* (January 12, 2014).

**Why is the reward system of top managers tied to different types of measures than those of lower-level managers? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 4 | Performance Evaluation

The service division of Metro Industries reported the following results for 2020.

| | |
|---|---|
| Sales | $400,000 |
| Variable costs | 320,000 |
| Controllable fixed costs | 40,800 |
| Average operating assets | 280,000 |

Management is considering the following independent courses of action in 2021 in order to maximize the return on investment for this division.

1. Reduce average operating assets by $80,000, with no change in controllable margin.
2. Increase sales $80,000, with no change in the contribution margin percentage.

**a.** Compute the controllable margin and the return on investment for 2020.

**b.** Compute the controllable margin and the expected return on investment for 2021 for each proposed alternative.

**ACTION PLAN**

- Recall key formulas: Sales – Variable costs = Contribution margin.
- Contribution margin – Controllable fixed costs = Controllable margin.
- Return on investment = Controllable margin ÷ Average operating assets.

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**Solution**

**a.** Return on investment for 2020:

| | |
|---|---|
| Sales | $400,000 |
| Variable costs | 320,000 |
| Contribution margin | 80,000 |
| Controllable fixed costs | 40,800 |
| Controllable margin | $ 39,200 |

$$\text{Return on investment} = \frac{\$39{,}200}{\$280{,}000} = 14\%$$

**b.** Expected return on investment for alternative 1:

$$\frac{\$39{,}200}{\$280{,}000 - \$80{,}000} = 19.6\%$$

Expected return on investment for alternative 2:

| | |
|---|---|
| Sales ($400,000 + $80,000) | $480,000 |
| Variable costs ($320,000/$400,000 × $480,000) | 384,000 |
| Contribution margin | 96,000 |
| Controllable fixed costs | 40,800 |
| Controllable margin | $ 55,200 |

$$\text{Return on investment} = \frac{\$55{,}200}{\$280{,}000} = 19.7\%$$

Related exercise material: **BE25.8, BE25.9, BE25.10, DO IT! 25.4, E25.16, and E25.17.**

# Appendix 25A ROI vs. Residual Income

**LEARNING OBJECTIVE *5**

Explain the difference between ROI and residual income.

Although most companies use ROI to evaluate investment performance, ROI has a significant disadvantage. To illustrate, let's look at the Electronics Division of Pujols Company. It has an ROI of 20%, computed as shown in Illustration 25A.1.

**ILLUSTRATION 25A.1**
**ROI formula**

| Controllable Margin | ÷ | Average Operating Assets | = | Return on Investment (ROI) |
|---|---|---|---|---|
| $1,000,000 | ÷ | $5,000,000 | = | 20% |

The Electronics Division is considering producing a new product, a GPS device (hereafter referred to as Tracker) for its boats. To produce Tracker, operating assets will have to increase $2,000,000. Tracker is expected to generate an additional $260,000 of controllable margin. Illustration 25A.2 shows how Tracker will effect ROI.

**ILLUSTRATION 25A.2**
**ROI comparison**

| | Without Tracker | Tracker | With Tracker |
|---|---|---|---|
| Controllable margin (a) | $1,000,000 | $ 260,000 | $1,260,000 |
| Average operating assets (b) | $5,000,000 | $2,000,000 | $7,000,000 |
| Return on investment [(a) ÷ (b)] | 20% | 13% | 18% |

The investment in Tracker reduces ROI from 20% to 18%.

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Let's suppose that you are the manager of the Electronics Division and must make the decision to produce or not produce Tracker. If you were evaluated using ROI, you probably would not produce Tracker because your ROI would drop from 20% to 18%. The problem with this ROI analysis is that it ignores an important variable: the minimum rate of return on a company's operating assets. The **minimum rate of return** is the rate at which the Electronics Division can cover its costs and earn a profit. Assuming that the Electronics Division has a minimum rate of return of 10%, it should invest in Tracker because its ROI of 13% is greater than 10%.

## Residual Income Compared to ROI

To evaluate performance using the minimum rate of return, companies use the residual income approach. **Residual income** is the income that remains after subtracting from the controllable margin the minimum rate of return on a company's average operating assets. The residual income for Tracker would be computed as shown in **Illustration 25A.3**.

**ILLUSTRATION 25A.3**
**Residual income formula**

| Controllable Margin | – | Minimum Rate of Return × Average Operating Assets | = | Residual Income |
|---|---|---|---|---|
| $260,000 | – | 10% × $2,000,000 | = | $60,000 |

As shown, the residual income related to the Tracker investment is $60,000. **Illustration 25A.4** indicates how residual income changes as the additional investment is made.

**ILLUSTRATION 25A.4**
**Residual income comparison**

| | Without Tracker | Tracker | With Tracker |
|---|---|---|---|
| Controllable margin (a) | $1,000,000 | $260,000 | $1,260,000 |
| Average operating assets × 10% (b) | 500,000 | 200,000 | 700,000 |
| Residual income [(a) – (b)] | $ 500,000 | $ 60,000 | **$ 560,000** |

This example illustrates how performance evaluation based on ROI can be misleading and can even cause managers to reject projects that would actually increase income for the company. As a result, many companies such as **Coca-Cola**, **Briggs and Stratton**, **Eli Lilly**, and **Siemens AG** use residual income (or a variant often referred to as economic value added) to evaluate investment alternatives and measure company performance.

## Residual Income Weakness

It might appear from the above discussion that the goal of any company should be to maximize the total amount of residual income in each division. This goal, however, ignores the fact that one division might use substantially fewer assets to attain the same level of residual income as another division. For example, we know that to produce Tracker, the Electronics Division of Pujols Company used $2,000,000 of average operating assets to generate $260,000 of controllable margin. Now let's say a different division produced a product called SeaDog, which used $4,000,000 to generate $460,000 of controllable margin, as shown in **Illustration 25A.5**.

**ILLUSTRATION 25A.5**
**Comparison of two products**

| | Tracker | SeaDog |
|---|---|---|
| Controllable margin (a) | $260,000 | $460,000 |
| Average operating assets × 10% (b) | 200,000 | 400,000 |
| Residual income [(a) – (b)] | **$ 60,000** | **$ 60,000** |

If the performance of these two investments were evaluated using residual income, they would be considered equal: Both products have the same total residual income. This ignores, however, the fact that SeaDog required **twice** as many operating assets to achieve the same level of residual income.

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# Review and Practice

## Learning Objectives Review

### 1 Describe budgetary control and static budget reports.

Budgetary control consists of (a) preparing periodic budget reports that compare actual results with planned objectives, (b) analyzing the differences to determine their causes, (c) taking appropriate corrective action, and (d) modifying future plans, if necessary.

Static budget reports are useful in evaluating the progress toward planned sales and profit goals. They are also appropriate in assessing a manager's effectiveness in controlling costs when (a) actual activity closely approximates the master budget activity level, and/or (b) the behavior of the costs in response to changes in activity is fixed.

### 2 Prepare flexible budget reports.

To develop the flexible budget it is necessary to: (a) Identify the activity index and the relevant range of activity. (b) Identify the variable costs, and determine the budgeted variable cost per unit of activity for each cost. (c) Identify the fixed costs, and determine the budgeted amount for each cost. (d) Prepare the budget for selected increments of activity within the relevant range. Flexible budget reports permit an evaluation of a manager's performance in controlling production and costs.

### 3 Apply responsibility accounting to cost and profit centers.

Responsibility accounting involves accumulating and reporting revenues and costs on the basis of the individual manager who has the authority to make the day-to-day decisions about the items. The evaluation of a manager's performance is based on the matters directly under the manager's control. In responsibility accounting, it is necessary to distinguish between controllable and noncontrollable fixed costs and to identify three types of responsibility centers: cost, profit, and investment.

Responsibility reports for cost centers compare actual costs with flexible budget data. The reports show only controllable costs, and no distinction is made between variable and fixed costs. Responsibility reports show contribution margin, controllable fixed costs, and controllable margin for each profit center.

### 4 Evaluate performance in investment centers.

The primary basis for evaluating performance in investment centers is return on investment (ROI). The formula for computing ROI for investment centers is Controllable margin ÷ Average operating assets.

### *5 Explain the difference between ROI and residual income.

ROI is controllable margin divided by average operating assets. Residual income is the income that remains after subtracting the minimum rate of return on a company's average operating assets. ROI sometimes provides misleading results because profitable investments are often rejected when the investment reduces ROI but increases overall profitability.

## Glossary Review

**Budgetary control** The use of budgets to control operations. (p. 25-3).

**Controllable cost** A cost over which a manager has control. (p. 25-15).

**Controllable margin** Contribution margin less controllable fixed costs. (p. 25-21).

**Cost center** A responsibility center that incurs costs but does not directly generate revenues. (p. 25-18).

**Decentralization** Control of operations is delegated to many managers throughout the organization. (p. 25-14).

**Direct fixed costs** Costs that relate specifically to a responsibility center and are incurred for the sole benefit of the center. (p. 25-21).

**Flexible budget** A projection of budget data for various levels of activity. (p. 25-6).

**Indirect fixed costs** Costs that are incurred for the benefit of more than one profit center. (p. 25-21).

**Investment center** A responsibility center that incurs costs, generates revenues, and has control over decisions regarding the assets available for use. (p. 25-18).

**Management by exception** The review of budget reports by top management focused entirely or primarily on significant differences between actual results and planned objectives. (p. 25-15).

**Noncontrollable costs** Costs incurred indirectly and allocated to a responsibility center that are not controllable at that level. (p. 25-15).

**Profit center** A responsibility center that incurs costs and also generates revenues. (p. 25-18).

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*Residual income The income that remains after subtracting from the controllable margin the minimum rate of return on a company's average operating assets. (p. 25-27).

Responsibility accounting A part of management accounting that involves identifying and reporting revenues and costs on the basis of the manager who has the authority to make the day-to-day decisions about the items. (p. 25-13).

Responsibility reporting system The preparation of reports for each level of responsibility in the company's organization chart. (p. 25-17).

Return on investment (ROI) A measure of management's effectiveness in utilizing assets at its disposal in an investment center. (p. 25-22).

Segment (or division) An area of responsibility in decentralized operations. (p. 25-14).

Static budget A projection of budget data at one level of activity. (p. 25-4).

## Practice Multiple-Choice Questions

1. (LO 1) Budgetary control involves all but one of the following:
   a. modifying future plans.
   b. analyzing differences.
   c. using static budgets but **not** flexible budgets.
   d. determining differences between actual and planned results.

2. (LO 1) Depending on the nature of the report, budget reports are prepared:
   a. daily.
   b. weekly.
   c. monthly.
   d. All of the above.

3. (LO 1) A production manager in a manufacturing company would most likely receive a:
   a. sales report.
   b. income statement.
   c. scrap report.
   d. shipping department overhead report.

4. (LO 1) A static budget is:
   a. a projection of budget data at several levels of activity within the relevant range of activity.
   b. a projection of budget data at a single level of activity.
   c. compared to a flexible budget in a budget report.
   d. never appropriate in evaluating a manager's effectiveness in controlling costs.

5. (LO 1) A static budget is useful in controlling costs when cost behavior is:
   a. mixed.
   b. fixed.
   c. variable.
   d. linear.

6. (LO 2) At zero direct labor hours in a flexible budget graph, the total budgeted cost line intersects the vertical axis at $30,000. At 10,000 direct labor hours, a horizontal line drawn from the total budgeted cost line intersects the vertical axis at $90,000. Fixed and variable costs may be expressed as:
   a. $30,000 fixed plus $6 per direct labor hour variable.
   b. $30,000 fixed plus $9 per direct labor hour variable.
   c. $60,000 fixed plus $3 per direct labor hour variable.
   d. $60,000 fixed plus $6 per direct labor hour variable.

7. (LO 2) At 9,000 direct labor hours, the flexible budget for indirect materials (a variable cost) is $27,000. If $28,000 of indirect materials costs are incurred at 9,200 direct labor hours, the flexible budget report should show the following difference for indirect materials:
   a. $1,000 unfavorable.
   b. $1,000 favorable.
   c. $400 favorable.
   d. $400 unfavorable.

8. (LO 3) Under responsibility accounting, the evaluation of a manager's performance is based on matters that the manager:
   a. directly controls.
   b. directly and indirectly controls.
   c. indirectly controls.
   d. has shared responsibility for with another manager.

9. (LO 3) Responsibility centers include:
   a. cost centers.
   b. profit centers.
   c. investment centers.
   d. All of the above.

10. (LO 3) Responsibility reports for cost centers:
    a. distinguish between fixed and variable costs.
    b. use static budget data.
    c. include both controllable and noncontrollable costs.
    d. include only controllable costs.

11. (LO 3) The accounting department of a manufacturing company is an example of:
    a. a cost center.
    b. a profit center.
    c. an investment center.
    d. a contribution center.

12. (LO 3) To evaluate the performance of a profit center manager, upper management needs detailed information about:
    a. controllable costs.
    b. controllable revenues.
    c. controllable costs and revenues.
    d. controllable costs and revenues and average operating assets.

13. (LO 3) In a responsibility report for a profit center, controllable fixed costs are deducted from contribution margin to show:
    a. profit center margin.
    b. controllable margin.
    c. net income.
    d. income from operations.

14. (LO 4) In the formula for return on investment (ROI), the factors for controllable margin and operating assets are, respectively:
    a. controllable margin percentage and total operating assets.
    b. controllable margin dollars and average operating assets.
    c. controllable margin dollars and total assets.
    d. controllable margin percentage and average operating assets.

15. (LO 4) A manager of an investment center can improve ROI by:
    a. increasing average operating assets.
    b. reducing sales.
    c. increasing variable costs.
    d. reducing variable and/or controllable fixed costs.

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### Solutions

**1. c.** Budgetary control involves using flexible budgets and sometimes static budgets. The other choices are all part of budgetary control.

**2. d.** Budget reports are prepared daily, weekly, or monthly. The other choices are correct, but choice (d) is the better answer.

**3. c.** A production manager in a manufacturing company would most likely receive a scrap report. The other choices are incorrect because (a) top management or a sales manager would most likely receive a sales report, (b) top management would most likely receive an income statement, and (d) a department manager would most likely receive a shipping department overhead report.

**4. b.** A static budget is a projection of budget data at a single level of activity. The other choices are incorrect because a static budget (a) is a projection of budget data at a single level of activity, not at several levels of activity within the relevant range of activity; (c) is not compared to a flexible budget in a budget report; and (d) is appropriate in evaluating a manager's effectiveness in controlling fixed costs.

**5. b.** A static budget is useful for controlling fixed costs. The other choices are incorrect because a static budget is not useful for controlling (a) mixed costs, (c) variable costs, or (d) linear costs.

**6. a.** The intersection point of $90,000 is total budgeted costs, or budgeted fixed costs plus budgeted variable costs. Fixed costs are $30,000 (amount at zero direct labor hours), so budgeted variable costs are $60,000 [$90,000 (Total costs) − $30,000 (Fixed costs)]. Budgeted variable costs ($60,000) divided by total activity level (10,000 direct labor hours) gives the variable cost per unit of $6 per direct labor hour. The other choices are therefore incorrect.

**7. d.** Budgeted indirect materials per direct labor hour (DLH) is $3 ($27,000/9,000). At an activity level of 9,200 direct labor hours, budgeted indirect materials are $27,600 (9,200 × $3 per DLH) but actual indirect materials costs are $28,000, resulting in a $400 unfavorable difference. The other choices are therefore incorrect.

**8. a.** The evaluation of a manager's performance is based only on matters that the manager directly controls. The other choices are therefore incorrect as they include indirect controls and shared responsibility.

**9. d.** Cost centers, profit centers, and investment centers are all responsibility centers. The other choices are correct, but choice (d) is the better answer.

**10. d.** Responsibility reports for cost centers report only controllable costs; they (a) do not distinguish between fixed and variable costs; (b) use flexible budget data, not static budget data; and (c) do not include noncontrollable costs.

**11. a.** The accounting department of a manufacturing company is an example of a cost center, not (b) a profit center, (c) an investment center, or (d) contribution center.

**12. c.** To evaluate the performance of a profit center manager, upper management needs detailed information about controllable costs and revenues, not just (a) controllable costs or (b) controllable revenues. Choice (d) is incorrect because upper management does not need information about average operating assets.

**13. b.** Contribution margin less controllable fixed costs is the controllable margin, not (a) the profit center margin, (c) net income, or (d) income from operations.

**14. b.** The factors in the formula for ROI are controllable margin dollars and average operating assets. The other choices are therefore incorrect.

**15. d.** Reducing variable or controllable fixed costs will cause the controllable margin to increase, which is one way a manager of an investment center can improve ROI. The other choices are incorrect because (a) increasing average operating assets will lower ROI; (b) reducing sales will cause contribution margin to go down, thereby decreasing controllable margin since there will be less contribution margin to cover controllable fixed costs and resulting in lower ROI; and (c) increasing variable costs will cause the contribution margin to be lower, thereby decreasing controllable margin and resulting in lower ROI.

## Practice Brief Exercises

*Prepare a flexible budget for variable costs.*

**1. (LO 2)** Borusa Company expects to produce 600,000 units of its product Eldrad in 2020. Monthly production is expected to range from 40,000 to 60,000 units. Budgeted variable manufacturing costs per unit are direct materials $4, direct labor $5, and overhead $8. Budgeted fixed manufacturing costs per unit are $2 for depreciation and $1.50 for supervision. Prepare a flexible manufacturing budget for the relevant range value using 10,000-unit increments.

### Solution

**1.**

**Borusa Company**
**Monthly Flexible Manufacturing Budget**
**For the Year 2020**

| | | | |
|---|---|---|---|
| Activity level | | | |
| Finished units | 40,000 | 50,000 | 60,000 |
| Variable costs | | | |
| Direct materials ($4) | $160,000 | $ 200,000 | $ 240,000 |
| Direct labor ($5) | 200,000 | 250,000 | 300,000 |
| Overhead ($8) | 320,000 | 400,000 | 480,000 |
| Total variable costs ($17) | $680,000 | $ 850,000 | $1,020,000 |
| Fixed costs | | | |
| Depreciation* | 100,000 | 100,000 | 100,000 |
| Supervision** | 75,000 | 75,000 | 75,000 |
| Total fixed costs | 175,000 | 175,000 | 175,000 |
| Total costs | $855,000 | $1,025,000 | $1,195,000 |

*($2 × 600,000) ÷ 12; **($1.50 × 600,000) ÷ 12

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**2. (LO 3)** Goth Company accumulates the following summary data for the year ending December 31, 2020, for its Chancellor Division, which it operates as a profit center: sales—$2,000,000 budget, $1,940,000 actual; variable costs—$1,000,000 budget, $980,000 actual; and controllable fixed costs—$300,000 budget, $317,000 actual. Prepare a responsibility report for the Chancellor Division.

*Prepare a responsibility report for a profit center.*

### Solution

**2.**

**Goth Company**
**Chancellor Division**
**Responsibility Report**
**For the Year Ended December 31, 2020**

| | Budget | Actual | Difference Favorable F Unfavorable U |
|---|---|---|---|
| Sales | $2,000,000 | $1,940,000 | $60,000 U |
| Variable costs | 1,000,000 | 980,000 | 20,000 F |
| Contribution margin | 1,000,000 | 960,000 | 40,000 U |
| Controllable fixed costs | 300,000 | 317,000 | 17,000 U |
| Controllable margin | $ 700,000 | $ 643,000 | $57,000 F |

**3. (LO 4)** For its three investment centers, Usher Company accumulates the following data:

*Compute return on investment using the ROI formula.*

| | I | II | III |
|---|---|---|---|
| Sales | $2,000,000 | $4,000,000 | $4,000,000 |
| Controllable margin | 1,200,000 | 2,100,000 | 2,400,000 |
| Average operating assets | 4,000,000 | 7,000,000 | 9,600,000 |

Compute the return on investment (ROI) for each center.

### Solution

**3.**

I ($1,200,000 ÷ $4,000,000) = 30%
II ($2,100,000 ÷ $7,000,000) = 30%
III ($2,400,000 ÷ $9,600,000) = 25%

## Practice Exercises

**1. (LO 2)** Felix Company uses a flexible budget for manufacturing overhead based on direct labor hours. Variable manufacturing overhead costs per direct labor hour are as follows.

*Prepare flexible manufacturing overhead budget.*

| | |
|---|---|
| Indirect labor | $0.70 |
| Indirect materials | 0.50 |
| Utilities | 0.40 |

Budgeted fixed overhead costs per month are supervision $4,000, depreciation $3,000, and property taxes $800. The company believes it will normally operate in a range of 7,000–10,000 direct labor hours per month.

### Instructions

Prepare a monthly flexible manufacturing overhead budget for 2020 for the expected range of activity, using increments of 1,000 direct labor hours.

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**Solution**

**1.**

**Felix Company**
**Monthly Flexible Manufacturing Overhead Budget**
**For the Year 2020**

| | | | | |
|---|---|---|---|---|
| Activity level | | | | |
| Direct labor hours | 7,000 | 8,000 | 9,000 | 10,000 |
| Variable costs | | | | |
| Indirect labor ($.70) | $ 4,900 | $ 5,600 | $ 6,300 | $ 7,000 |
| Indirect materials ($.50) | 3,500 | 4,000 | 4,500 | 5,000 |
| Utilities ($.40) | 2,800 | 3,200 | 3,600 | 4,000 |
| Total variable costs ($1.60) | 11,200 | 12,800 | 14,400 | 16,000 |
| Fixed costs | | | | |
| Supervision | 4,000 | 4,000 | 4,000 | 4,000 |
| Depreciation | 3,000 | 3,000 | 3,000 | 3,000 |
| Property taxes | 800 | 800 | 800 | 800 |
| Total fixed costs | 7,800 | 7,800 | 7,800 | 7,800 |
| Total costs | $19,000 | $20,600 | $22,200 | $23,800 |

*Compute ROI for current year and for possible future changes.*

**2. (LO 4)** The White Division of Mesin Company reported the following data for the current year.

| | |
|---|---|
| Sales | $3,000,000 |
| Variable costs | 2,400,000 |
| Controllable fixed costs | 400,000 |
| Average operating assets | 5,000,000 |

Top management is unhappy with the investment center's return on investment (ROI). It asks the manager of the White Division to submit plans to improve ROI in the next year. The manager believes it is feasible to consider the following independent courses of action.

1. Increase sales by $300,000 with no change in the contribution margin percentage.
2. Reduce variable costs by $100,000.
3. Reduce average operating assets by 4%.

**Instructions**

**a.** Compute the return on investment (ROI) for the current year.

**b.** Using the ROI formula, compute the ROI under each of the proposed courses of action. (Round to one decimal.)

**Solution**

**2. a.** Controllable margin = ($3,000,000 − $2,400,000 − $400,000) = $200,000
ROI = $200,000 ÷ $5,000,000 = 4%

**b. 1.** Contribution margin percentage is 20%, or [($3,000,000 − $2,400,000) ÷ $3,000,000]
Increase in controllable margin = $300,000 × 20% = $60,000
ROI = ($200,000 + $60,000) ÷ $5,000,000 = 5.2%

**2.** ($200,000 + $100,000) ÷ $5,000,000 = 6%

**3.** $200,000 ÷ [$5,000,000 − ($5,000,000 × .04)] = 4.2%

## Practice Problem

*Prepare flexible budget report.*

**(LO 2)** Glenda Company uses a flexible budget for manufacturing overhead based on direct labor hours. For 2020, the master overhead budget for the Packaging Department based on 300,000 direct labor hours was as follows.

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| Variable Costs | | Fixed Costs | |
|---|---|---|---|
| Indirect labor | $360,000 | Supervision | $ 60,000 |
| Supplies and lubricants | 150,000 | Depreciation | 24,000 |
| Maintenance | 210,000 | Property taxes | 18,000 |
| Utilities | 120,000 | Insurance | 12,000 |
| | $840,000 | | $114,000 |

During July, 24,000 direct labor hours were worked. The company incurred the following variable costs in July: indirect labor $30,200, supplies and lubricants $11,600, maintenance $17,500, and utilities $9,200. Actual fixed overhead costs were the same as monthly budgeted fixed costs.

### Instructions

Prepare a flexible budget report for the Packaging Department for July.

### Solution

**Glenda Company**
**Manufacturing Overhead Budget Report (Flexible)**
**Packaging Department**
**For the Month Ended July 31, 2020**

| | | | Difference |
|---|---|---|---|
| **Direct labor hours (DLH)** | **Budget 24,000 DLH** | **Actual Costs 24,000 DLH** | **Favorable F Unfavorable U** |
| Variable costs | | | |
| Indirect labor ($1.20[a]) | $28,800 | $30,200 | $1,400 U |
| Supplies and lubricants ($0.50[a]) | 12,000 | 11,600 | 400 F |
| Maintenance ($0.70[a]) | 16,800 | 17,500 | 700 U |
| Utilities ($0.40[a]) | 9,600 | 9,200 | 400 F |
| Total variable | 67,200 | 68,500 | 1,300 U |
| Fixed costs | | | |
| Supervision | $ 5,000[b] | $ 5,000 | –0– |
| Depreciation | 2,000[b] | 2,000 | –0– |
| Property taxes | 1,500[b] | 1,500 | –0– |
| Insurance | 1,000[b] | 1,000 | –0– |
| Total fixed | 9,500 | 9,500 | –0– |
| Total costs | $76,700 | $78,000 | $1,300 U |

[a]($360,000 ÷ 300,000; $150,000 ÷ 300,000; $210,000 ÷ 300,000; $120,000 ÷ 300,000).
[b]Annual cost divided by 12.

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendix to the chapter.

## Questions

1. **a.** What is budgetary control?
   **b.** Fred Barone is describing budgetary control. What steps should be included in Fred's description?

2. The following purposes are part of a budgetary reporting system: (a) Determine efficient use of materials. (b) Control overhead costs. (c) Determine whether income objectives are being met. For each

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purpose, indicate the name of the report, the frequency of the report, and the primary recipient(s) of the report.

**3.** How may a budget report for the second quarter differ from a budget report for the first quarter?

**4.** Ken Bay questions the usefulness of a master sales budget in evaluating sales performance. Is there justification for Ken's concern? Explain.

**5.** Under what circumstances may a static budget be an appropriate basis for evaluating a manager's effectiveness in controlling costs?

**6.** "A flexible budget is really a series of static budgets." Is this true? Why?

**7.** The static manufacturing overhead budget based on 40,000 direct labor hours shows budgeted indirect labor costs of $54,000. During March, the department incurs $64,000 of indirect labor while working 45,000 direct labor hours. Is this a favorable or unfavorable performance? Why?

**8.** A static overhead budget based on 40,000 direct labor hours shows Factory Insurance $6,500 as a fixed cost. At the 50,000 direct labor hours worked in March, factory insurance costs were $6,300. Is this a favorable or unfavorable performance? Why?

**9.** Megan Pedigo is confused about how a flexible budget is prepared. Identify the steps for Megan.

**10.** Cali Company has prepared a graph of flexible budget data. At zero direct labor hours, the total budgeted cost line intersects the vertical axis at $20,000. At 10,000 direct labor hours, the line drawn from the total budgeted cost line intersects the vertical axis at $85,000. How may the fixed and variable costs be expressed?

**11.** The flexible budget formula is fixed costs $50,000 plus variable costs of $4 per direct labor hour. What is the total budgeted cost at (a) 9,000 hours and (b) 12,345 hours?

**12.** What is management by exception? What criteria may be used in identifying exceptions?

**13.** What is responsibility accounting? Explain the purpose of responsibility accounting.

**14.** Eve Rooney is studying for an accounting examination. Describe for Eve what conditions are necessary for responsibility accounting to be used effectively.

**15.** Distinguish between controllable and noncontrollable costs.

**16.** How do responsibility reports differ from budget reports?

**17.** What is the relationship, if any, between a responsibility reporting system and a company's organization chart?

**18.** Distinguish among the three types of responsibility centers.

**19.** (a) What costs are included in a performance report for a cost center? (b) In the report, are variable and fixed costs identified?

**20.** How do direct fixed costs differ from indirect fixed costs? Are both types of fixed costs controllable?

**21.** Jane Nott is confused about controllable margin reported in an income statement for a profit center. How is this margin computed, and what is its primary purpose?

**22.** What is the primary basis for evaluating the performance of the manager of an investment center? Indicate the formula for this basis.

**23.** Explain the ways that ROI can be improved.

**24.** Indicate two behavioral principles that pertain to (a) the manager being evaluated and (b) top management.

***25.** What is a major disadvantage of using ROI to evaluate investment and company performance?

***26.** What is residual income, and what is one of its major weaknesses?

## Brief Exercises

*Prepare static budget report.*

**BE25.1 (LO 1)** For the quarter ended March 31, 2020, Croix Company accumulates the following sales data for its newest guitar, The Edge: $315,000 budget; $305,000 actual. Prepare a static budget report for the quarter.

*Prepare static budget report for 2 quarters.*

**BE25.2 (LO 1)** Data for Croix Company are given in BE25.1. In the second quarter, budgeted sales were $380,000, and actual sales were $384,000. Prepare a static budget report for the second quarter and for the year to date.

*Show usefulness of flexible budgets in evaluating performance.*

**BE25.3 (LO 2)** In Rooney Company, direct labor is $20 per hour. The company expects to operate at 10,000 direct labor hours each month. In January 2020, direct labor totaling $206,000 is incurred in working 10,400 hours. Prepare (a) a static budget report and (b) a flexible budget report. Evaluate the usefulness of each report.

*Prepare a flexible budget for variable costs.*

**BE25.4 (LO 2)** Gundy Company expects to produce 1,200,000 units of Product XX in 2020. Monthly production is expected to range from 80,000 to 120,000 units. Budgeted variable manufacturing costs per unit are direct materials $5, direct labor $6, and overhead $8. Budgeted fixed manufacturing costs per unit for depreciation are $2 and for supervision are $1. Prepare a flexible manufacturing budget for the relevant range value using 20,000 unit increments.

*Prepare flexible budget report.*

**BE25.5 (LO 2)** Data for Gundy Company are given in BE25.4. In March 2020, the company incurs the following costs in producing 100,000 units: direct materials $520,000, direct labor $596,000, and variable overhead $805,000. Actual fixed costs were equal to budgeted fixed costs. Prepare a flexible budget report for March. Were costs controlled?

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**BE25.6 (LO 3)** In the Assembly Department of Hannon Company, budgeted and actual manufacturing overhead costs for the month of April 2020 were as follows. *Prepare a responsibility report for a cost center.*

| | Budget | Actual |
|---|---|---|
| Indirect materials | $16,000 | $14,300 |
| Indirect labor | 20,000 | 20,600 |
| Utilities | 10,000 | 10,850 |
| Supervision | 5,000 | 5,000 |

All costs are controllable by the department manager. Prepare a responsibility report for April for the cost center.

**BE25.7 (LO 3)** Torres Company accumulates the following summary data for the year ending December 31, 2020, for its Water Division, which it operates as a profit center: sales—$2,000,000 budget, $2,080,000 actual; variable costs—$1,000,000 budget, $1,050,000 actual; and controllable fixed costs—$300,000 budget, $305,000 actual. Prepare a responsibility report for the Water Division for the year ending December 31, 2020. *Prepare a responsibility report for a profit center.*

**BE25.8 (LO 4)** For the year ending December 31, 2020, Cobb Company accumulates the following data for the Plastics Division which it operates as an investment center: contribution margin—$700,000 budget, $710,000 actual; controllable fixed costs—$300,000 budget, $302,000 actual. Average operating assets for the year were $2,000,000. Prepare a responsibility report for the Plastics Division beginning with contribution margin for the year ending December 31, 2020. *Prepare a responsibility report for an investment center.*

**BE25.9 (LO 4)** For its three investment centers, Gerrard Company accumulates the following data: *Compute return on investment using the ROI formula.*

| | I | II | III |
|---|---|---|---|
| Sales | $2,000,000 | $4,000,000 | $ 4,000,000 |
| Controllable margin | 1,400,000 | 2,000,000 | 3,600,000 |
| Average operating assets | 5,000,000 | 8,000,000 | 10,000,000 |

Compute the return on investment (ROI) for each center.

**BE25.10 (LO 4)** Data for the investment centers for Gerrard Company are given in BE25.9. The centers expect the following changes in the next year: (I) increase sales 15%, (II) decrease costs $400,000, and (III) decrease average operating assets $500,000. Compute the expected return on investment (ROI) for each center. Assume center I has a controllable margin percentage of 70%. *Compute return on investment under changed conditions.*

***BE25.11 (LO 5)** Sterling, Inc. reports the following financial information for its sports clothing segment. *Compute ROI and residual income.*

| | |
|---|---|
| Average operating assets | $3,000,000 |
| Controllable margin | $ 630,000 |
| Minimum rate of return | 10% |

Compute the return on investment and the residual income for the segment.

***BE25.12 (LO 5)** Presented below is information related to the Southern Division of Lumber, Inc. *Compute ROI and residual income.*

| | |
|---|---|
| Contribution margin | $1,200,000 |
| Controllable margin | $ 800,000 |
| Average operating assets | $4,000,000 |
| Minimum rate of return | 15% |

Compute the Southern Division's return on investment and residual income.

## DO IT! Exercises

**DO IT! 25.1 (LO 1)** Wade Company estimates that it will produce 6,000 units of product IOA during the current month. Budgeted variable manufacturing costs per unit are direct materials $7, direct labor $13, and overhead $18. Monthly budgeted fixed manufacturing overhead costs are $8,000 for depreciation and $3,800 for supervision. *Prepare and evaluate a static budget report.*

In the current month, Wade actually produced 6,500 units and incurred the following costs: direct materials $38,850, direct labor $76,440, variable overhead $116,640, depreciation $8,000, and supervision $4,000.

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Prepare a static budget report. *Hint:* The Budget column is based on estimated production while the Actual column is the actual cost incurred during the period. (*Note:* You do not need to prepare the heading.) Were costs controlled? Discuss limitations of the budget.

*Compute total budgeted costs in flexible budget.*

**DO IT! 25.2 (LO 2)** In Pargo Company's flexible budget graph, the fixed cost line and the total budgeted cost line intersect the vertical axis at $90,000. The total budgeted cost line is $350,000 at an activity level of 50,000 direct labor hours. Compute total budgeted costs at 65,000 direct labor hours.

*Prepare a responsibility report.*

**DO IT! 25.3 (LO 3)** The Rockies Division operates as a profit center. It reports the following for the year ending December 31, 2020.

| | Budget | Actual |
|---|---|---|
| Sales | $2,000,000 | $1,890,000 |
| Variable costs | 800,000 | 760,000 |
| Controllable fixed costs | 550,000 | 550,000 |
| Noncontrollable fixed costs | 250,000 | 250,000 |

Prepare a responsibility report for the Rockies Division at December 31, 2020.

*Compute ROI and expected return on investments.*

**DO IT! 25.4 (LO 4)** The service division of Raney Industries reported the following results for 2020.

| | |
|---|---|
| Sales | $500,000 |
| Variable costs | 300,000 |
| Controllable fixed costs | 75,000 |
| Average operating assets | 625,000 |

Management is considering the following independent courses of action in 2021 in order to maximize the return on investment for this division.

1. Reduce average operating assets by $125,000, with no change in controllable margin.
2. Increase sales $100,000, with no change in the contribution margin percentage.

**a.** Compute the controllable margin and the return on investment for 2020.

**b.** Compute the controllable margin and the expected return on investment for 2021 for each proposed alternative.

## Exercises

*Understand the concept of budgetary control.*

**E25.1 (LO 1, 2)** Connie Rice has prepared the following list of statements about budgetary control.

1. Budget reports compare actual results with planned objectives.
2. All budget reports are prepared on a weekly basis.
3. Management uses budget reports to analyze differences between actual and planned results and to determine their causes.
4. As a result of analyzing budget reports, management may either take corrective action or modify future plans.
5. Budgetary control works best when a company has an informal reporting system.
6. The primary recipients of the sales report are the sales manager and the production supervisor.
7. The primary recipient of the scrap report is the production manager.
8. A static budget is a projection of budget data at a single level of activity.
9. Top management's reaction to unfavorable differences is not influenced by the materiality of the difference.
10. A static budget is not appropriate in evaluating a manager's effectiveness in controlling costs unless the actual activity level approximates the static budget activity level or the behavior of the costs is fixed.

### Instructions

Identify each statement as true or false. If false, indicate how to correct the statement.

*Prepare and evaluate static budget report.*

**E25.2 (LO 1)** Crede Company budgeted selling expenses of $30,000 in January, $35,000 in February, and $40,000 in March. Actual selling expenses were $31,200 in January, $34,525 in February, and $46,000 in March. The company considers any difference that is less than 5% of the budgeted amount to be immaterial.

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**Instructions**

**a.** Prepare a selling expense report that compares budgeted and actual amounts by month and for the year to date.

**b.** What is the purpose of the report prepared in (a), and who would be the primary recipient?

**c.** What would be the likely result of management's analysis of the report?

**E25.3 (LO 2)** Myers Company uses a flexible budget for manufacturing overhead based on direct labor hours. Variable manufacturing overhead costs per direct labor hour are as follows.

*Prepare flexible manufacturing overhead budget.*

Excel

| | |
|---|---|
| Indirect labor | $1.00 |
| Indirect materials | 0.70 |
| Utilities | 0.40 |

Fixed overhead costs per month are supervision $4,000, depreciation $1,200, and property taxes $800. The company believes it will normally operate in a range of 7,000–10,000 direct labor hours per month.

**Instructions**

Prepare a monthly manufacturing overhead flexible budget for 2020 for the expected range of activity, using increments of 1,000 direct labor hours.

**E25.4 (LO 2)** Writing Using the information in E25.3, assume that in July 2020, Myers Company incurs the following manufacturing overhead costs.

*Prepare flexible budget reports for manufacturing overhead costs, and comment on findings.*

Excel

| Variable Costs | | Fixed Costs | |
|---|---|---|---|
| Indirect labor | $8,800 | Supervision | $4,000 |
| Indirect materials | 5,800 | Depreciation | 1,200 |
| Utilities | 3,200 | Property taxes | 800 |

**Instructions**

**a.** Prepare a flexible budget performance report, assuming that the company worked 9,000 direct labor hours during the month.

**b.** Prepare a flexible budget performance report, assuming that the company worked 8,500 direct labor hours during the month.

**c.** Comment on your findings.

**E25.5 (LO 2)** Fallon Company uses flexible budgets to control its selling expenses. Monthly sales are expected to range from $170,000 to $200,000. Variable costs and their percentage relationship to sales are sales commissions 6%, advertising 4%, travel 3%, and delivery 2%. Fixed selling expenses will consist of sales salaries $35,000, depreciation on delivery equipment $7,000, and insurance on delivery equipment $1,000.

*Prepare flexible selling expense budget.*

Excel

**Instructions**

Prepare a monthly selling expense flexible budget for each $10,000 increment of sales within the relevant range for the year ending December 31, 2020.

**E25.6 (LO 2)** Writing The actual selling expenses incurred in March 2020 by Fallon Company are as follows.

*Prepare flexible budget reports for selling expenses.*

| Variable Expenses | | Fixed Expenses | |
|---|---|---|---|
| Sales commissions | $11,000 | Sales salaries | $35,000 |
| Advertising | 6,900 | Depreciation | 7,000 |
| Travel | 5,100 | Insurance | 1,000 |
| Delivery | 3,450 | | |

**Instructions**

**a.** Prepare a flexible budget performance report for March using the budget data in E25.5, assuming that March sales were $170,000.

**b.** Prepare a flexible budget performance report, assuming that March sales were $180,000.

**c.** Comment on the importance of using flexible budgets in evaluating the performance of the sales manager.

**E25.7 (LO 2)** Appliance Possible Inc. (AP) is a manufacturer of toaster ovens. To improve control over operations, the president of AP wants to begin using a flexible budgeting system, rather than use only the current master budget. The following data are available for AP's expected costs at production levels of 90,000, 100,000, and 110,000 units.

*Prepare flexible budget report.*

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| | |
|---|---|
| Variable costs | |
| Manufacturing | $6 per unit |
| Administrative | $4 per unit |
| Selling | $3 per unit |
| Fixed costs | |
| Manufacturing | $160,000 |
| Administrative | $ 80,000 |

**Instructions**

**a.** Prepare a flexible budget for each of the possible production levels: 90,000, 100,000, and 110,000 units.

**b.** If AP sells the toaster ovens for $16 each, how many units will it have to sell to make a profit of $60,000 before taxes?

(CGA adapted)

*Prepare flexible budget report; compare flexible and static budgets.*

**E25.8 (LO 1, 2)** Service Writing Rensing Groomers is in the dog-grooming business. Its operating costs are described by the following formulas:

| | |
|---|---|
| Grooming supplies (variable) | y = $0 + $5x |
| Direct labor (variable) | y = $0 + $14x |
| Overhead (mixed) | y = $10,000 + $1x |

Milo, the owner, has determined that direct labor is the cost driver for all three categories of costs.

**Instructions**

**a.** Prepare a flexible budget for activity levels of 550, 600, and 700 direct labor hours.

**b.** Explain why the flexible budget is more informative than the static budget.

**c.** Calculate the total cost per direct labor hour at each of the activity levels specified in part (a).

**d.** The groomers at Rensing normally work a total of 650 direct labor hours during each month. Each grooming job normally takes a groomer 1.3 hours. Milo wants to earn a profit equal to 40% of the costs incurred. Determine what he should charge each pet owner for grooming.

(CGA adapted)

*Prepare flexible budget report, and answer question.*

**E25.9 (LO 1, 2)** As sales manager, Joe Batista was given the following static budget report for selling expenses in the Clothing Department of Soria Company for the month of October.

**Soria Company**
**Clothing Department**
**Budget Report**
**For the Month Ended October 31, 2020**

| | Budget | Actual | Difference Favorable F Unfavorable U |
|---|---|---|---|
| Sales in units | 8,000 | 10,000 | 2,000 F |
| Variable expenses | | | |
| Sales commissions | $ 2,400 | $ 2,600 | $ 200 U |
| Advertising expense | 720 | 850 | 130 U |
| Travel expense | 3,600 | 4,100 | 500 U |
| Free samples given out | 1,600 | 1,400 | 200 F |
| Total variable | 8,320 | 8,950 | 630 U |
| Fixed expenses | | | |
| Rent | 1,500 | 1,500 | –0– |
| Sales salaries | 1,200 | 1,200 | –0– |
| Office salaries | 800 | 800 | –0– |
| Depreciation—autos (sales staff) | 500 | 500 | –0– |
| Total fixed | 4,000 | 4,000 | –0– |
| Total expenses | $12,320 | $12,950 | $ 630 U |

As a result of this budget report, Joe was called into the president's office and congratulated on his fine sales performance. He was reprimanded, however, for allowing his costs to get out of control. Joe knew something was wrong with the performance report that he had been given. However, he was not sure what to do, and comes to you for advice.

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### Instructions

**a.** Prepare a budget report based on flexible budget data to help Joe.

**b.** Should Joe have been reprimanded? Explain.

**E25.10 (LO 2, 3)** Chubbs Inc.'s manufacturing overhead budget for the first quarter of 2020 contained the following data.

*Prepare flexible budget and responsibility report for manufacturing overhead.*

| Variable Costs | | Fixed Costs | |
|---|---|---|---|
| Indirect materials | $12,000 | Supervisory salaries | $36,000 |
| Indirect labor | 10,000 | Depreciation | 7,000 |
| Utilities | 8,000 | Property taxes and insurance | 8,000 |
| Maintenance | 6,000 | Maintenance | 5,000 |

Actual variable costs were indirect materials $13,500, indirect labor $9,500, utilities $8,700, and maintenance $5,000. Actual fixed costs equaled budgeted costs except for property taxes and insurance, which were $8,300. The actual activity level equaled the budgeted level.

All costs are considered controllable by the production department manager except for depreciation, and property taxes and insurance.

### Instructions

**a.** Prepare a manufacturing overhead flexible budget report for the first quarter.

**b.** Prepare a responsibility report for the first quarter.

**E25.11 (LO 2, 3)** Service Writing UrLink Company is a newly formed company specializing in high-speed Internet service for home and business. The owner, Lenny Kirkland, had divided the company into two segments: Home Internet Service and Business Internet Service. Each segment is run by its own supervisor, while basic selling and administrative services are shared by both segments.

*Prepare and discuss a responsibility report.*

Lenny has asked you to help him create a performance reporting system that will allow him to measure each segment's performance in terms of its profitability. To that end, the following information has been collected on the Home Internet Service segment for the first quarter of 2020.

| | Budget | Actual |
|---|---|---|
| Service revenue | $25,000 | $26,200 |
| Allocated portion of: | | |
| Building depreciation | 11,000 | 11,000 |
| Advertising | 5,000 | 4,200 |
| Billing | 3,500 | 3,000 |
| Property taxes | 1,200 | 1,000 |
| Material and supplies | 1,600 | 1,200 |
| Supervisory salaries | 9,000 | 9,500 |
| Insurance | 4,000 | 3,900 |
| Wages | 3,000 | 3,250 |
| Gas and oil | 2,800 | 3,400 |
| Equipment depreciation | 1,500 | 1,300 |

### Instructions

**a.** Prepare a responsibility report for the first quarter of 2020 for the Home Internet Service segment.

**b.** Write a memo to Lenny Kirkland discussing the principles that should be used when preparing performance reports.

**E25.12 (LO 2)** Venetian Company has two production departments, Fabricating and Assembling. At a department managers' meeting, the controller uses flexible budget graphs to explain total budgeted costs. Separate graphs based on direct labor hours are used for each department. The graphs show the following.

*State total budgeted cost formulas, and prepare flexible budget graph.*

1. At zero direct labor hours, the total budgeted cost line and the fixed cost line intersect the vertical axis at $50,000 in the Fabricating Department and $40,000 in the Assembling Department.
2. At normal capacity of 50,000 direct labor hours, the line drawn from the total budgeted cost line intersects the vertical axis at $150,000 in the Fabricating Department, and $120,000 in the Assembling Department.

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**Instructions**

**a.** State the total budgeted cost formula for each department.

**b.** Compute the total budgeted cost for each department, assuming actual direct labor hours worked were 53,000 and 47,000, in the Fabricating and Assembling Departments, respectively.

**c.** Prepare the flexible budget graph for the Fabricating Department, assuming the maximum direct labor hours in the relevant range is 100,000. Use increments of 10,000 direct labor hours on the horizontal axis and increments of $50,000 on the vertical axis.

*Prepare reports in a responsibility reporting system.*

**E25.13 (LO 3)** Fey Company's organization chart includes the president; the vice president of production; three assembly plants—Dallas, Atlanta, and Tucson; and two departments within each plant—Machining and Finishing. Budget and actual manufacturing cost data for July 2020 are as follows.

*Finishing Department—Dallas*: direct materials $42,500 actual, $44,000 budget; direct labor $83,400 actual, $82,000 budget; manufacturing overhead $51,000 actual, $49,200 budget.

*Machining Department—Dallas*: total manufacturing costs $220,000 actual, $219,000 budget.

*Atlanta Plant:* total manufacturing costs $424,000 actual, $420,000 budget.

*Tucson Plant:* total manufacturing costs $494,200 actual, $496,500 budget.

The Dallas plant manager's office costs were $95,000 actual and $92,000 budget. The vice president of production's office costs were $132,000 actual and $130,000 budget. Office costs are not allocated to departments and plants.

**Instructions**

Using the format shown in Illustration 25.19, prepare the reports in a responsibility system for:

**a.** The Finishing Department—Dallas.

**b.** The plant manager—Dallas.

**c.** The vice president of production.

*Prepare a responsibility report for a cost center.*

**E25.14 (LO 3)** The Mixing Department manager of Malone Company is able to control all overhead costs except rent, property taxes, and salaries. Budgeted monthly overhead costs for the Mixing Department, in alphabetical order, are:

| | | | |
|---|---|---|---|
| Indirect labor | $12,000 | Property taxes | $ 1,000 |
| Indirect materials | 7,700 | Rent | 1,800 |
| Lubricants | 1,675 | Salaries | 10,000 |
| Maintenance | 3,500 | Utilities | 5,000 |

Actual costs incurred for January 2020 are indirect labor $12,250; indirect materials $10,200; lubricants $1,650; maintenance $3,500; property taxes $1,100; rent $1,800; salaries $10,000; and utilities $6,400.

**Instructions**

**a.** Prepare a responsibility report for January 2020.

**b.** What would be the likely result of management's analysis of the report?

*Compute missing amounts in responsibility reports for three profit centers, and prepare a report.*

**E25.15 (LO 3)** Horatio Inc. has three divisions which are operated as profit centers. Actual operating data for the divisions listed alphabetically are as follows.

| Operating Data | Women's Shoes | Men's Shoes | Children's Shoes |
|---|---|---|---|
| Contribution margin | $270,000 | (3) | $180,000 |
| Controllable fixed costs | 100,000 | (4) | (5) |
| Controllable margin | (1) | $ 90,000 | 95,000 |
| Sales | 600,000 | 450,000 | (6) |
| Variable costs | (2) | 320,000 | 250,000 |

**Instructions**

**a.** Compute the missing amounts. Show computations.

**b.** Prepare a responsibility report for the Women's Shoes Division assuming (1) the data are for the month ended June 30, 2020, and (2) all data equal budget except variable costs which are $5,000 over budget.

*Prepare a responsibility report for a profit center, and compute ROI.*

**E25.16 (LO 3, 4)** The Sports Equipment Division of Harrington Company is operated as a profit center. Sales for the division were budgeted for 2020 at $900,000. The only variable costs budgeted for the division were cost of goods sold ($440,000) and selling and administrative ($60,000). Fixed costs

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were budgeted at $100,000 for cost of goods sold, $90,000 for selling and administrative, and $70,000 for noncontrollable fixed costs. Actual results for these items were:

| | |
|---|---|
| Sales | $880,000 |
| Cost of goods sold | |
| Variable | 408,000 |
| Fixed | 105,000 |
| Selling and administrative | |
| Variable | 61,000 |
| Fixed | 66,000 |
| Noncontrollable fixed | 90,000 |

**Instructions**

**a.** Prepare a responsibility report for the Sports Equipment Division for 2020.

**b.** Assume the division is an investment center, and average operating assets were $1,000,000. The noncontrollable fixed costs are controllable at the investment center level. Compute ROI using the actual amounts.

**E25.17 (LO 4)** The South Division of Wiig Company reported the following data for the current year.

*Compute ROI for current year and for possible future changes.*

| | |
|---|---|
| Sales | $3,000,000 |
| Variable costs | 1,950,000 |
| Controllable fixed costs | 600,000 |
| Average operating assets | 5,000,000 |

Top management is unhappy with the investment center's return on investment (ROI). It asks the manager of the South Division to submit plans to improve ROI in the next year. The manager believes it is feasible to consider the following independent courses of action.

1. Increase sales by $300,000 with no change in the contribution margin percentage.
2. Reduce variable costs by $150,000.
3. Reduce average operating assets by 4%.

**Instructions**

**a.** Compute the return on investment (ROI) for the current year.

**b.** Using the ROI formula, compute the ROI under each of the proposed courses of action. (Round to one decimal.)

**E25.18 (LO 4)** Service Writing The Dinkle and Frizell Dental Clinic provides both preventive and orthodontic dental services. The two owners, Reese Dinkle and Anita Frizell, operate the clinic as two separate investment centers: Preventive Services and Orthodontic Services. Each of them is in charge of one of the centers: Reese for Preventive Services and Anita for Orthodontic Services. Each month, they prepare an income statement for the two centers to evaluate performance and make decisions about how to improve the operational efficiency and profitability of the clinic.

*Prepare a responsibility report for an investment center.*

Recently, they have been concerned about the profitability of the Preventive Services operations. For several months, it has been reporting a loss. The responsibility report for the month of May 2020 is shown below.

| | Actual | Difference from Budget |
|---|---|---|
| Service revenue | $40,000 | $1,000 F |
| Variable costs | | |
| Filling materials | 5,000 | 100 U |
| Novocain | 3,900 | 100 U |
| Supplies | 1,900 | 350 F |
| Dental assistant wages | 2,500 | –0– |
| Utilities | 500 | 110 U |
| Total variable costs | 13,800 | 40 F |
| Fixed costs | | |
| Allocated portion of receptionist's salary | 3,000 | 200 U |
| Dentist salary | 9,800 | 400 U |
| Equipment depreciation | 6,000 | –0– |
| Allocated portion of building depreciation | 15,000 | 1,000 U |
| Total fixed costs | 33,800 | 1,600 U |
| Operating income (loss) | $ (7,600) | $ 560 U |

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In addition, the owners know that the investment in operating assets at the beginning of the month was $82,400, and it was $77,600 at the end of the month. They have asked for your assistance in evaluating their current performance reporting system.

**Instructions**

**a.** Prepare an investment center responsibility report for the Preventative Services segment for May 2020.

**b.** Write a memo to the owners discussing the deficiencies of their current reporting system.

*Prepare missing amounts in responsibility reports for three investment centers.*

**E25.19 (LO 4)** Service The Ferrell Transportation Company uses a responsibility reporting system to measure the performance of its three investment centers: Planes, Taxis, and Limos. Segment performance is measured using a system of responsibility reports and return on investment calculations. The allocation of resources within the company and the segment managers' bonuses are based in part on the results shown in these reports.

Recently, the company was the victim of a computer virus that deleted portions of the company's accounting records. This was discovered when the current period's responsibility reports were being prepared. The printout of the actual operating results appeared as follows.

| | Planes | Taxis | Limos |
|---|---|---|---|
| Service revenue | $ ? | $500,000 | $ ? |
| Variable costs | 5,500,000 | ? | 300,000 |
| Contribution margin | ? | 250,000 | 480,000 |
| Controllable fixed costs | 1,500,000 | ? | ? |
| Controllable margin | ? | 80,000 | 210,000 |
| Average operating assets | 25,000,000 | ? | 1,500,000 |
| Return on investment | 12% | 10% | ? |

**Instructions**

Determine the missing pieces of information above.

*Compare ROI and residual income.*

***E25.20 (LO 5)** Presented below is selected information for three regional divisions of Medina Company.

| | Divisions | | |
|---|---|---|---|
| | North | West | South |
| Contribution margin | $ 300,000 | $ 500,000 | $ 400,000 |
| Controllable margin | $ 140,000 | $ 360,000 | $ 210,000 |
| Average operating assets | $1,000,000 | $2,000,000 | $1,500,000 |
| Minimum rate of return | 13% | 16% | 10% |

**Instructions**

**a.** Compute the return on investment for each division.

**b.** Compute the residual income for each division.

**c.** Assume that each division has an investment opportunity that would provide a rate of return of 16%.

**1.** If ROI is used to measure performance, which division or divisions will probably make the additional investment?

**2.** If residual income is used to measure performance, which division or divisions will probably make the additional investment?

*Fill in information related to ROI and residual income.*

***E25.21 (LO 5)** Presented below is selected financial information for two divisions of Samberg Brewing.

| | Lager | Lite Lager |
|---|---|---|
| Contribution margin | $500,000 | $ 300,000 |
| Controllable margin | 200,000 | (c) |
| Average operating assets | (a) | $1,200,000 |
| Minimum rate of return | (b) | 11% |
| Return on investment | 16% | (d) |
| Residual income | $100,000 | $ 204,000 |

**Instructions**

Supply the missing information for the lettered items.

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## Problems: Set A

**P25.1A (LO 2)** Writing Bumblebee Company estimates that 300,000 direct labor hours will be worked during the coming year, 2020, in the Packaging Department. On this basis, the following budgeted manufacturing overhead cost data are computed for the year.

*Prepare flexible budget and budget report for manufacturing overhead.*

Excel

| Fixed Overhead Costs | | Variable Overhead Costs | |
|---|---|---|---|
| Supervision | $ 96,000 | Indirect labor | $126,000 |
| Depreciation | 72,000 | Indirect materials | 90,000 |
| Insurance | 30,000 | Repairs | 69,000 |
| Rent | 24,000 | Utilities | 72,000 |
| Property taxes | 18,000 | Lubricants | 18,000 |
| | $240,000 | | $375,000 |

It is estimated that direct labor hours worked each month will range from 27,000 to 36,000 hours.

During October, 27,000 direct labor hours were worked and the following overhead costs were incurred.

Fixed overhead costs: supervision $8,000, depreciation $6,000, insurance $2,460, rent $2,000, and property taxes $1,500.

Variable overhead costs: indirect labor $12,432, indirect materials $7,680, repairs $6,100, utilities $6,840, and lubricants $1,920.

### Instructions

**a.** Prepare a monthly manufacturing overhead flexible budget for each increment of 3,000 direct labor hours over the relevant range for the year ending December 31, 2020.

a. Total costs: DLH 27,000, $53,750; DLH 36,000, $65,000

**b.** Prepare a flexible budget report for October.

b. Total $1,182 U

**c.** Comment on management's efficiency in controlling manufacturing overhead costs in October.

**P25.2A (LO 2)** Zelmer Company manufactures tablecloths. Sales have grown rapidly over the past 2 years. As a result, the president has installed a budgetary control system for 2020. The following data were used in developing the master manufacturing overhead budget for the Ironing Department, which is based on an activity index of direct labor hours.

*Prepare flexible budget, budget report, and graph for manufacturing overhead.*

| Variable Costs | Rate per Direct Labor Hour | Annual Fixed Costs | |
|---|---|---|---|
| Indirect labor | $0.40 | Supervision | $48,000 |
| Indirect materials | 0.50 | Depreciation | 18,000 |
| Factory utilities | 0.30 | Insurance | 12,000 |
| Factory repairs | 0.20 | Rent | 30,000 |

The master overhead budget was prepared on the expectation that 480,000 direct labor hours will be worked during the year. In June, 41,000 direct labor hours were worked. At that level of activity, actual costs were as shown below.

Variable—per direct labor hour: indirect labor $0.44, indirect materials $0.48, factory utilities $0.32, and factory repairs $0.25.

Fixed: same as budgeted.

### Instructions

**a.** Prepare a monthly manufacturing overhead flexible budget for the year ending December 31, 2020, assuming production levels range from 35,000 to 50,000 direct labor hours. Use increments of 5,000 direct labor hours.

a. Total costs: 35,000 DLH, $58,000; 50,000 DLH, $79,000

**b.** Prepare a budget report for June comparing actual results with budget data based on the flexible budget.

b. Budget $66,400 Actual $70,090

**c.** Were costs effectively controlled? Explain.

**d.** State the formula for computing the total budgeted costs for the Ironing Department.

**e.** Prepare the flexible budget graph, showing total budgeted costs at 35,000 and 45,000 direct labor hours. Use increments of 5,000 direct labor hours on the horizontal axis and increments of $10,000 on the vertical axis.

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*State total budgeted cost formula, and prepare flexible budget reports for 2 time periods.*

Excel

**P25.3A (LO 1, 2)** Ratchet Company uses budgets in controlling costs. The August 2020 budget report for the company's Assembling Department is as follows.

**Ratchet Company**
**Budget Report**
**Assembling Department**
**For the Month Ended August 31, 2020**

| Manufacturing Costs | Budget | Actual | Difference Favorable F Unfavorable U |
|---|---|---|---|
| Variable costs | | | |
| Direct materials | $ 48,000 | $ 47,000 | $1,000 F |
| Direct labor | 54,000 | 51,200 | 2,800 F |
| Indirect materials | 24,000 | 24,200 | 200 U |
| Indirect labor | 18,000 | 17,500 | 500 F |
| Utilities | 15,000 | 14,900 | 100 F |
| Maintenance | 12,000 | 12,400 | 400 U |
| Total variable | 171,000 | 167,200 | 3,800 F |
| Fixed costs | | | |
| Rent | 12,000 | 12,000 | –0– |
| Supervision | 17,000 | 17,000 | –0– |
| Depreciation | 6,000 | 6,000 | –0– |
| Total fixed | 35,000 | 35,000 | –0– |
| Total costs | $206,000 | $202,200 | $3,800 F |

The monthly budget amounts in the report were based on an expected production of 60,000 units per month or 720,000 units per year. The Assembling Department manager is pleased with the report and expects a raise, or at least praise for a job well done. The company president, however, is unhappy with the results for August because only 58,000 units were produced.

**Instructions**

**a.** State the total monthly budgeted cost formula.

b. Budget $200,300

**b.** Prepare a budget report for August using flexible budget data. Why does this report provide a better basis for evaluating performance than the report based on static budget data?

c. Budget $217,400
Actual $218,920

**c.** In September, 64,000 units were produced. Prepare the budget report using flexible budget data, assuming (1) each variable cost was 10% higher than its actual cost in August, and (2) fixed costs were the same in September as in August.

*Prepare responsibility report for a profit center.*

**P25.4A (LO 3)** Writing Clarke Inc. operates the Patio Furniture Division as a profit center. Operating data for this division for the year ended December 31, 2020, are as shown below.

| | Budget | Difference from Budget |
|---|---|---|
| Sales | $2,500,000 | $50,000 F |
| Cost of goods sold | | |
| Variable | 1,300,000 | 41,000 F |
| Controllable fixed | 200,000 | 3,000 U |
| Selling and administrative | | |
| Variable | 220,000 | 6,000 U |
| Controllable fixed | 50,000 | 2,000 U |
| Noncontrollable fixed costs | 70,000 | 4,000 U |

In addition, Clarke incurs $180,000 of indirect fixed costs that were budgeted at $175,000. Twenty percent (20%) of these costs are allocated to the Patio Furniture Division.

**Instructions**

a. Contribution margin $85,000 F
Controllable margin $80,000 F

**a.** Prepare a responsibility report for the Patio Furniture Division for the year.

**b.** Comment on the manager's performance in controlling revenues and costs.

**c.** Identify any costs excluded from the responsibility report and explain why they were excluded.

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**P25.5A (LO 4)** Optimus Company manufactures a variety of tools and industrial equipment. The company operates through three divisions. Each division is an investment center. Operating data for the Home Division for the year ended December 31, 2020, and relevant budget data are as follows.

*Prepare responsibility report for an investment center, and compute ROI.*

| | Actual | Comparison with Budget |
|---|---|---|
| Sales | $1,400,000 | $100,000 favorable |
| Variable cost of goods sold | 665,000 | 45,000 unfavorable |
| Variable selling and administrative expenses | 125,000 | 25,000 unfavorable |
| Controllable fixed cost of goods sold | 170,000 | On target |
| Controllable fixed selling and administrative expenses | 80,000 | On target |

Average operating assets for the year for the Home Division were $2,000,000 which was also the budgeted amount.

## Instructions

**a.** Prepare a responsibility report (in thousands of dollars) for the Home Division.

a. Controllable margin: Budget $330; Actual $360

**b.** Evaluate the manager's performance. Which items will likely be investigated by top management?

**c.** Compute the expected ROI in 2020 for the Home Division, assuming the following independent changes to actual data.

**1.** Variable cost of goods sold is decreased by 5%.

**2.** Average operating assets are decreased by 10%.

**3.** Sales are increased by $200,000, and this increase is expected to increase contribution margin by $80,000.

**P25.6A (LO 3)** Durham Company uses a responsibility reporting system. It has divisions in Denver, Seattle, and San Diego. Each division has three production departments: Cutting, Shaping, and Finishing. The responsibility for each department rests with a manager who reports to the division production manager. Each division manager reports to the vice president of production. There are also vice presidents for marketing and finance. All vice presidents report to the president.

*Prepare reports for cost centers under responsibility accounting, and comment on performance of managers.*

In January 2020, controllable actual and budget manufacturing overhead cost data for the departments and divisions were as shown below.

| Manufacturing Overhead | Actual | Budget |
|---|---|---|
| Individual costs—Cutting Department—Seattle | | |
| Indirect labor | $ 73,000 | $ 70,000 |
| Indirect materials | 47,900 | 46,000 |
| Maintenance | 20,500 | 18,000 |
| Utilities | 20,100 | 17,000 |
| Supervision | 22,000 | 20,000 |
| | $183,500 | $171,000 |
| Total costs | | |
| Shaping Department—Seattle | $158,000 | $148,000 |
| Finishing Department—Seattle | 210,000 | 205,000 |
| Denver division | 678,000 | 673,000 |
| San Diego division | 722,000 | 715,000 |

Additional overhead costs were incurred as follows: Seattle division production manager—actual costs $52,500, budget $51,000; vice president of production—actual costs $65,000, budget $64,000; president—actual costs $76,400, budget $74,200. These expenses are not allocated.

The vice presidents who report to the president, other than the vice president of production, had the following expenses.

| Vice President | Actual | Budget |
|---|---|---|
| Marketing | $133,600 | $130,000 |
| Finance | 109,000 | 104,000 |

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a. $12,500 U
b. $29,000 U
c. $42,000 U
d. $52,800 U

**Instructions**

Using the format in Illustration 25.19, prepare the following responsibility reports.

**a.** Manufacturing overhead—Cutting Department manager—Seattle division.
**b.** Manufacturing overhead—Seattle division manager.
**c.** Manufacturing overhead—vice president of production.
**d.** Manufacturing overhead and expenses—president.

*Compare ROI and residual income.*

***P25.7A (LO 5)** **Writing** Sentinel Industries has manufactured prefabricated houses for over 20 years. The houses are constructed in sections to be assembled on customers' lots. Sentinel expanded into the precut housing market when it acquired Jensen Company, one of its suppliers. In this market, various types of lumber are precut into the appropriate lengths, banded into packages, and shipped to customers' lots for assembly. Sentinel designated the Jensen Division as an investment center.

Sentinel uses return on investment (ROI) as a performance measure with investment defined as average operating assets. Management bonuses are based in part on ROI. All investments are expected to earn a minimum rate of return of 18%. Jensen's ROI has ranged from 20.1% to 23.5% since it was acquired. Jensen had an investment opportunity in 2020 that had an estimated ROI of 19%. Jensen management decided against the investment because it believed the investment would decrease the division's overall ROI.

Selected financial information for Jensen are presented below. The division's average operating assets were $12,300,000 for the year 2020.

**Sentinel Industries**
**Jensen Division**
**Selected Financial Information**
**For the Year Ended December 31, 2020**

| | |
|---|---|
| Sales | $24,000,000 |
| Contribution margin | 9,100,000 |
| Controllable margin | 2,460,000 |

**Instructions**

**a.** Calculate the following performance measures for 2020 for the Jensen Division.
  **1.** Return on investment (ROI).
  **2.** Residual income.
**b.** Would the management of Jensen Division have been more likely to accept the investment opportunity it had in 2020 if residual income were used as a performance measure instead of ROI? Explain your answer.

(CMA adapted)

## Continuing Cases

### Current Designs

Excel

**CD25** The **Current Designs** staff has prepared the annual manufacturing budget for the rotomolded line based on an estimated annual production of 4,000 kayaks during 2020. Each kayak will require 54 pounds of polyethylene powder and a finishing kit (rope, seat, hardware, etc.). The polyethylene powder used in these kayaks costs $1.50 per pound, and the finishing kits cost $170 each. Each kayak will use two kinds of labor—2 hours of type I labor from people who run the oven and trim the plastic, and 3 hours of work from type II workers who attach the hatches and seat and other hardware. The type I employees are paid $15 per hour, and the type II are paid $12 per hour.

Manufacturing overhead is budgeted at $396,000 for 2020, broken down as follows.

| | |
|---|---|
| Variable costs | |
| Indirect materials | $ 40,000 |
| Manufacturing supplies | 53,800 |
| Maintenance and utilities | 88,000 |
| | 181,800 |

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| | |
|---|---|
| Fixed costs | |
| Supervision | 90,000 |
| Insurance | 14,400 |
| Depreciation | 109,800 |
| | 214,200 |
| Total | $396,000 |

During the first quarter, ended March 31, 2020, 1,050 units were actually produced with the following costs.

| | |
|---|---|
| Polyethylene powder | $ 87,000 |
| Finishing kits | 178,840 |
| Type I labor | 31,500 |
| Type II labor | 39,060 |
| Indirect materials | 10,500 |
| Manufacturing supplies | 14,150 |
| Maintenance and utilities | 26,000 |
| Supervision | 20,000 |
| Insurance | 3,600 |
| Depreciation | 27,450 |
| Total | $438,100 |

### Instructions

**a.** Prepare the annual manufacturing budget for 2020, assuming that 4,000 kayaks will be produced.

**b.** Prepare the flexible budget for manufacturing for the quarter ended March 31, 2020. Assume activity levels of 900, 1,000, and 1,050 units.

**c.** Assuming the rotomolded line is treated as a cost center, prepare a flexible budget report for manufacturing for the quarter ended March 31, 2020, when 1,050 units were produced.

## Waterways

(*Note:* This is a continuation of the Waterways case from Chapters 19–24.)

**WP25** Waterways Corporation is continuing its budget preparations. This problem gives you static budget information as well as actual overhead costs, and asks you to calculate amounts related to budgetary control and responsibility accounting.

*Go to* **WileyPLUS** *for complete case details and instructions.*

# Expand Your Critical Thinking

## Decision-Making Across the Organization

**CT25.1** **Service** Green Pastures is a 400-acre farm on the outskirts of the Kentucky Bluegrass, specializing in the boarding of broodmares and their foals. A recent economic downturn in the thoroughbred industry has made the boarding business extremely competitive. To meet the competition, Green Pastures planned in 2020 to entertain clients, advertise more extensively, and absorb expenses formerly paid by clients such as veterinary and blacksmith fees.

The budget report for 2020 follows. As shown, the static income statement budget for the year is based on an expected 21,900 boarding days at $25 per mare. The variable expenses per mare per day were budgeted: feed $5, veterinary fees $3, blacksmith fees $0.25, and supplies $0.55. All other budgeted expenses were either semifixed or fixed.

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During the year, management decided not to replace a worker who quit in March, but it did issue a new advertising brochure and did more entertaining of clients.[1]

**Green Pastures**
**Static Budget Income Statement**
**For the Year Ended December 31, 2020**

| | Actual | Master Budget | Difference |
|---|---|---|---|
| Number of mares | 52 | 60 | 8 U |
| Number of boarding days | 19,000 | 21,900 | 2,900 U |
| Sales | $380,000 | $547,500 | $167,500 U |
| Less: Variable expenses | | | |
| Feed | 104,390 | 109,500 | 5,110 F |
| Veterinary fees | 58,838 | 65,700 | 6,862 F |
| Blacksmith fees | 4,984 | 5,475 | 491 F |
| Supplies | 10,178 | 12,045 | 1,867 F |
| Total variable expenses | 178,390 | 192,720 | 14,330 F |
| Contribution margin | 201,610 | 354,780 | 153,170 U |
| Less: Fixed expenses | | | |
| Depreciation | 40,000 | 40,000 | –0– |
| Insurance | 11,000 | 11,000 | –0– |
| Utilities | 12,000 | 14,000 | 2,000 F |
| Repairs and maintenance | 10,000 | 11,000 | 1,000 F |
| Labor | 88,000 | 95,000 | 7,000 F |
| Advertisement | 12,000 | 8,000 | 4,000 U |
| Entertainment | 7,000 | 5,000 | 2,000 U |
| Total fixed expenses | 180,000 | 184,000 | 4,000 F |
| Net income | $ 21,610 | $170,780 | $149,170 U |

### Instructions

With the class divided into groups, answer the following.

**a.** Based on the static budget report:
  **1.** What was the primary cause(s) of the decline in net income?
  **2.** Did management do a good, average, or poor job of controlling expenses?
  **3.** Were management's decisions to stay competitive sound?

**b.** Prepare a flexible budget report for the year.

**c.** Based on the flexible budget report, answer the three questions in part (a) above.

**d.** What course of action do you recommend for the management of Green Pastures?

## Managerial Analysis

**CT25.2** Lanier Company manufactures expensive watch cases sold as souvenirs. Three of its sales departments are Retail Sales, Wholesale Sales, and Outlet Sales. The Retail Sales Department is a profit center. The Wholesale Sales Department is a cost center. Its managers merely take orders from customers who purchase through the company's wholesale catalog. The Outlet Sales Department is an investment center because each manager is given full responsibility for an outlet store location. The manager can hire and discharge employees, purchase, maintain, and sell equipment, and in general is fairly independent of company control.

Mary Gammel is a manager in the Retail Sales Department. Stephen Flott manages the Wholesale Sales Department. Jose Gomez manages the Golden Gate Club outlet store in San Francisco. The following are the budget responsibility reports for each of the three departments.

[1]Data for this case are based on Hans Sprohge and John Talbott, "New Applications for Variance Analysis," *Journal of Accountancy* (AICPA, New York), April 1989, pp. 137–141.

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**Budget**

| | Retail Sales | Wholesale Sales | Outlet Sales |
|---|---|---|---|
| Sales | $ 750,000 | $ 400,000 | $200,000 |
| Variable costs | | | |
| Cost of goods sold | 150,000 | 100,000 | 25,000 |
| Advertising | 100,000 | 30,000 | 5,000 |
| Sales salaries | 75,000 | 15,000 | 3,000 |
| Printing | 10,000 | 20,000 | 5,000 |
| Travel | 20,000 | 30,000 | 2,000 |
| Fixed costs | | | |
| Rent | 50,000 | 30,000 | 10,000 |
| Insurance | 5,000 | 2,000 | 1,000 |
| Depreciation | 75,000 | 100,000 | 40,000 |
| Investment in assets | 1,000,000 | 1,200,000 | 800,000 |

**Actual Results**

| | Retail Sales | Wholesale Sales | Outlet Sales |
|---|---|---|---|
| Sales | $ 750,000 | $ 400,000 | $200,000 |
| Variable costs | | | |
| Cost of goods sold | 192,000 | 122,000 | 26,500 |
| Advertising | 100,000 | 30,000 | 5,000 |
| Sales salaries | 75,000 | 15,000 | 3,000 |
| Printing | 10,000 | 20,000 | 5,000 |
| Travel | 14,000 | 21,000 | 1,500 |
| Fixed costs | | | |
| Rent | 40,000 | 50,000 | 12,300 |
| Insurance | 5,000 | 2,000 | 1,000 |
| Depreciation | 80,000 | 90,000 | 56,000 |
| Investment in assets | 1,000,000 | 1,200,000 | 800,000 |

### Instructions

**a.** Determine which of the items should be included in the responsibility report for each of the three managers.

**b.** Compare the budgeted measures with the actual results. Decide which results should be called to the attention of each manager.

## Real-World Focus

**CT25.3 Computer Associates International, Inc.**, the world's leading business software company, delivers the end-to-end infrastructure to enable e-business through innovative technology, services, and education. Recently, Computer Associates had 19,000 employees worldwide and revenue of over $6 billion.

The following information is from the company's annual report.

**Computer Associates International, Inc.**
Management Discussion

The Company has experienced a pattern of business whereby revenue for its third and fourth fiscal quarters reflects an increase over first- and second-quarter revenue. The Company attributes this increase to clients' increased spending at the end of their calendar year budgetary periods and the culmination of its annual sales plan. Since the Company's costs do not increase proportionately with the third- and fourth-quarters' increase in revenue, the higher revenue in these quarters results in greater profit margins and income. Fourth-quarter profitability is traditionally affected by significant new hirings, training, and education expenditures for the succeeding year.

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**Instructions**

**a.** Why don't the company's costs increase proportionately as the revenues increase in the third and fourth quarters?

**b.** What type of budgeting seems appropriate for the Computer Associates situation?

## Communication Activity

**CT25.4** The manufacturing overhead budget for Fleming Company contains the following items.

| Variable costs | | Fixed costs | |
|---|---|---|---|
| Indirect materials | $22,000 | Supervision | $17,000 |
| Indirect labor | 12,000 | Inspection costs | 1,000 |
| Maintenance expense | 10,000 | Insurance expense | 2,000 |
| Manufacturing supplies | 6,000 | Depreciation | 15,000 |
| Total variable | $50,000 | Total fixed | $35,000 |

The budget was based on an estimated 2,000 units being produced. During the past month, 1,500 units were produced, and the following costs incurred.

| Variable costs | | Fixed costs | |
|---|---|---|---|
| Indirect materials | $22,500 | Supervision | $18,400 |
| Indirect labor | 13,500 | Inspection costs | 1,200 |
| Maintenance expense | 8,200 | Insurance expense | 2,200 |
| Manufacturing supplies | 5,000 | Depreciation | 14,700 |
| Total variable | $49,200 | Total fixed | $36,500 |

**Instructions**

**a.** Determine which items would be controllable by Fred Bedner, the production manager.

**b.** How much should have been spent during the month for the manufacture of the 1,500 units?

**c.** Prepare a flexible manufacturing overhead budget report for Mr. Bedner.

**d.** Prepare a responsibility report. Include only the costs that would have been controllable by Mr. Bedner. Assume that the supervision cost above includes Mr. Bedner's salary of $10,000, both at budget and actual. In an attached memo, describe clearly for Mr. Bedner the areas in which his performance needs to be improved.

## Ethics Case

**CT25.5** American Products Corporation participates in a highly competitive industry. In order to meet this competition and achieve profit goals, the company has chosen the decentralized form of organization. Each manager of a decentralized investment center is measured on the basis of profit contribution, market penetration, and return on investment. Failure to meet the objectives established by corporate management for these measures has not been acceptable and usually has resulted in demotion or dismissal of an investment center manager.

An anonymous survey of managers in the company revealed that the managers feel the pressure to compromise their personal ethical standards to achieve the corporate objectives. For example, at certain plant locations there was pressure to reduce quality control to a level which could not assure that all unsafe products would be rejected. Also, sales personnel were encouraged to use questionable sales tactics to obtain orders, including gifts and other incentives to purchasing agents.

The chief executive officer is disturbed by the survey findings. In his opinion, such behavior cannot be condoned by the company. He concludes that the company should do something about this problem.

**Instructions**

**a.** Who are the stakeholders (the affected parties) in this situation?

**b.** Identify the ethical implications, conflicts, or dilemmas in the above described situation.

**c.** What might the company do to reduce the pressures on managers and to decrease the ethical conflicts?

(CMA adapted)

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## All About You

**CT25.6** It is one thing to prepare a personal budget; it is another thing to stick to it. Financial planners have suggested various mechanisms to provide support for enforcing personal budgets. One approach is called "envelope budgeting."

### Instructions

Do an Internet search on "envelope system money management" and then answer the following questions.

**a.** Summarize the process of envelope budgeting.

**b.** Evaluate whether you think you would benefit from envelope budgeting. What do you think are its strengths and weaknesses relative to your situation?

## Considering Your Costs and Benefits

**CT25.7** Preparing a personal budget is a great first step toward control over your personal finances. It is especially useful to prepare a budget when you face a big decision. For most people, the biggest decision they will ever make is whether to purchase a house. The percentage of people in the United States who own a home is high compared to many other countries. This is partially the result of U.S. government programs and incentives that encourage home ownership. For example, the interest on a home mortgage is tax-deductible.

Before purchasing a house, you should first consider whether buying it is the best choice for you. Suppose you just graduated from college and are moving to a new community. Should you immediately buy a new home?

> **YES:** If I purchase a home, I am making my housing cost more like a "fixed cost," thus minimizing increases in my future housing costs. Also, I benefit from the appreciation in my home's value. Although recent turbulence in the economy has caused home prices in many communities to decline, I know that over the long term, home prices have increased across the country.
>
> **NO:** I just moved to a new town, so I don't know the housing market. I am new to my job, so I don't know whether I will like it or my new community. Also, if my job does go well, it is likely that my income will increase in the next few years, so I will able to afford a better house if I wait. Therefore, the flexibility provided by renting is very valuable to me at this point in my life.

### Instructions

Write a response indicating your position regarding this situation. Provide support for your view.

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# Standard Costs and Balanced Scorecard

## Chapter Preview

Standards are a fact of life. You met the admission standards for the school you are attending. The vehicle that you drive had to meet certain governmental emissions standards. The hamburgers and salads that you eat in a restaurant have to meet certain health and nutritional standards before they can be sold. As described in the following Feature Story, **Starbucks** has standards for the costs of its materials, labor, and overhead. The reason for standards in these cases is very simple: They help to ensure that overall product quality is high while keeping costs under control.

In this chapter, we continue the study of controlling costs. You will learn how to evaluate performance using standard costs and a balanced scorecard.

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# Feature Story

## 80,000 Different Caffeinated Combinations

When Howard Schultz purchased a small Seattle coffee-roasting business in 1987, he set out to create a new kind of company. He thought the company should sell coffee by the cup in its store, in addition to the bags of roasted beans it already sold. He also saw the store as a place where you could order a beverage, custom-made to your unique tastes, in an environment that would give you the sense that you had escaped, if only momentarily, from the chaos we call life. Finally, Schultz believed that the company would prosper if employees shared in its success.

In a little more than 20 years, Howard Schultz's company, **Starbucks**, grew from that one store to over 17,000 locations in 54 countries. That is an incredible rate of growth, and it didn't happen by accident. While Starbucks does everything it can to maximize the customer's experience, behind the scenes it needs to control costs. Consider the almost infinite options of beverage combinations and variations at Starbucks. The company must determine the most efficient way to make each beverage, it must communicate these methods in the form of standards to its employees, and it must then evaluate whether those standards are being met.

Schultz's book, *Onward: How Starbucks Fought for Its Life Without Losing Its Soul*, describes a painful period in which Starbucks had to close 600 stores and lay off thousands of employees. However, when a prominent shareholder suggested that the company eliminate its employee healthcare plan, as so many other companies had done, Schultz refused. The healthcare plan represented one of the company's most tangible commitments to employee well-being as well as to corporate social responsibility. Schultz feels strongly that providing health care to the company's employees is an essential part of the standard cost of a cup of Starbucks' coffee.

**Video** **In WileyPLUS, watch the *Starbucks* video to learn more about how the company sets standards, and watch the *Southwest Airlines* video to learn more about the real-world use of the balanced scorecard.**

# Chapter Outline

### LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Describe standard costs. | • Distinguishing between standards and budgets<br>• Setting standard costs | **DO IT! 1** Standard Costs |
| **LO 2** Determine direct materials variances. | • Analyzing and reporting variances<br>• Calculating direct materials variances | **DO IT! 2** Direct Materials Variances |
| **LO 3** Determine direct labor and total manufacturing overhead variances. | • Direct labor variances<br>• Manufacturing overhead variances | **DO IT! 3** Labor and Manufacturing Overhead Variances |
| **LO 4** Prepare variance reports and balanced scorecards. | • Reporting variances<br>• Income statement presentation of variances<br>• Balanced scorecard | **DO IT! 4** Reporting Variances |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with Orion for additional tutorials and practice opportunities.**

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# Overview of Standard Costs

**LEARNING OBJECTIVE 1**

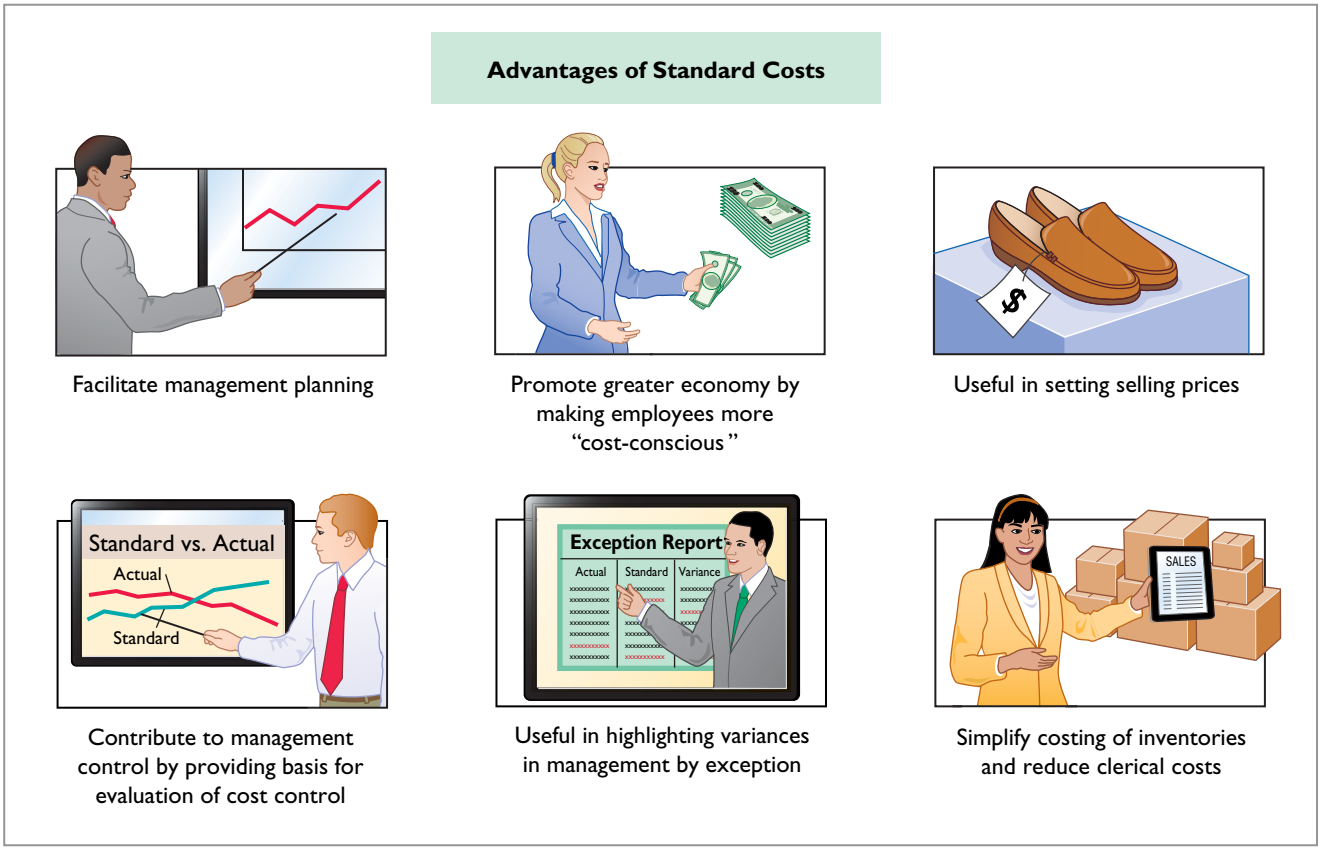
Describe standard costs.

Standards are common in business. Those imposed by government agencies are often called **regulations**. They include the Fair Labor Standards Act, the Equal Employment Opportunity Act, and a multitude of environmental standards. Standards established internally by a company may extend to personnel matters, such as employee absenteeism and ethical codes of conduct, quality control standards for products, and standard costs for goods and services. In managerial accounting, **standard costs** are predetermined unit costs, which companies use as measures of performance.

We focus on manufacturing operations in this chapter. But you should recognize that standard costs also apply to many types of service businesses as well. For example, a fast-food restaurant such as **McDonald's** knows the price it should pay for pickles, beef, buns, and other ingredients. It also knows how much time it should take an employee to flip hamburgers. If the company pays too much for pickles or if employees take too much time to prepare Big Macs, McDonald's notices the deviations from standards and takes corrective action. Not-for-profit entities, such as universities, charitable organizations, and governmental agencies, also may use standard costs as measures of performance.

Standard costs offer a number of advantages to an organization, as shown in **Illustration 26.1**. The organization will realize these advantages only when standard costs are carefully established and prudently used. Using standards solely as a way to place blame can have a negative effect on managers and employees. To minimize this effect, many companies offer wage incentives to those who meet the standards.

**ILLUSTRATION 26.1** **Advantages of standard costs**



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## Distinguishing Between Standards and Budgets

Both **standards** and **budgets** are predetermined costs, and both contribute to management planning and control. There is a difference, however, in the way the terms are expressed. A standard is a **unit** amount. A budget is a **total** amount. Thus, it is customary to state that the **standard cost** of direct labor for a unit of product is, say, $10. If the company produces 5,000 units of the product, the $50,000 of direct labor is the **budgeted** labor cost. A standard is the budgeted **cost per unit** of product. A standard is therefore concerned with each individual cost component that makes up the entire budget.

There are important accounting differences between budgets and standards. Except in the application of manufacturing overhead to jobs and processes, budget data are not journalized in cost accounting systems. In contrast, as we illustrate in the appendix to this chapter, standard costs may be incorporated into cost accounting systems. Also, a company may report its inventories at standard cost in its financial statements, but it would not report inventories at budgeted costs.

## Setting Standard Costs

The setting of standard costs to produce a unit of product is a difficult task. It requires input from all persons who have responsibility for costs and quantities. To determine the standard cost of direct materials, management consults purchasing agents, product managers, quality control engineers, and production supervisors. In setting the standard cost for direct labor, managers obtain pay rate data from the payroll department. Industrial engineers generally determine the labor time requirements. The managerial accountant provides important input for the standard-setting process by accumulating historical cost data and by knowing how costs respond to changes in activity levels.

To be effective in controlling costs, standard costs need to be current at all times. Thus, standards are under continuous review. They should change whenever managers determine that the existing standard is not a good measure of performance. Circumstances that warrant revision of a standard include changed wage rates resulting from a new union contract, a change in product specifications, or the implementation of a new manufacturing method.

### Ideal versus Normal Standards

Companies set standards at one of two levels: ideal or normal. **Ideal standards** represent optimum levels of performance under perfect operating conditions. **Normal standards** represent efficient levels of performance that are attainable under expected operating conditions.

Some managers believe ideal standards will stimulate workers to ever-increasing improvement. However, most managers believe that ideal standards lower the morale of the workforce because they are difficult, if not impossible, to meet (see **Ethics Note**). Very few companies use ideal standards.

**ETHICS NOTE**

**When standards are set too high, employees sometimes feel pressure to consider unethical practices to meet these standards.**

Most companies that use standards set them at a normal level. Properly set, normal standards should be **rigorous but attainable**. Normal standards allow for rest periods, machine breakdowns, and other "normal" contingencies in the production process. In the remainder of this chapter, we will assume that standard costs are set at a normal level.

## Accounting Across the Organization U.S. Navy

SpotX/iStockphoto

### How Do Standards Help a Business?

A number of organizations, including corporations, consultants, and governmental agencies, share information regarding performance standards in an effort to create a standard set of measures for thousands of business processes. The group, referred to as the Open Standards Benchmarking Collaborative, includes **IBM**, **Procter and Gamble**, the **U.S. Navy**, and the **World Bank**. Companies that are interested in participating can go to the group's website and enter their information.

**Source:** Becky Partida, "Benchmark Your Manufacturing Performance," Control Engineering (February 4, 2013).

**How will the creation of such standards help a business or organization? (Go to WileyPLUS for this answer and additional questions.)**

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## A Case Study

To establish the standard cost of producing a product, it is necessary to establish standards for each manufacturing cost element—direct materials, direct labor, and manufacturing overhead. The standard for each element is derived from the standard price to be paid and the standard quantity to be used.

To illustrate, we use an extended example. Xonic Beverage Company uses standard costs to measure performance at the production facility of its caffeinated energy drink, Xonic Tonic. Xonic produces one-gallon containers of concentrated syrup that it sells to coffee and smoothie shops, and other retail outlets. The syrup is mixed with ice water or ice "slush" before serving. The potency of the beverage varies depending on the amount of concentrated syrup used.

**Direct Materials.** The **direct materials price standard** is the cost per finished unit of product of direct materials that should be incurred. This standard is based on the purchasing department's best estimate of the **cost of raw materials**. This cost is frequently based on current purchase prices. The price standard also includes an amount for related costs such as receiving, storing, and handling. **Illustration 26.2** shows the materials price standard per pound of material for Xonic Tonic.

**ILLUSTRATION 26.2**
**Setting direct materials price standard**

| Item | Price |
|---|---|
| Purchase price, net of discounts | $2.70 |
| Freight | 0.20 |
| Receiving and handling | 0.10 |
| **Standard direct materials price per pound** | **$3.00** |

The **direct materials quantity standard** is the quantity of direct materials that management determines should be used per unit of finished goods. This standard is expressed as a physical measure, such as pounds, barrels, or board feet. In setting the standard, management considers both the quality and quantity of materials required to manufacture the product. The standard includes allowances for unavoidable waste and normal spoilage. The standard quantity per unit for Xonic Tonic is shown in **Illustration 26.3**.

**ILLUSTRATION 26.3**
**Setting direct materials quantity standard**

| Item | Quantity (Pounds) |
|---|---|
| Required materials | 3.5 |
| Allowance for waste | 0.4 |
| Allowance for spoilage | 0.1 |
| **Standard direct materials quantity per unit** | **4.0** |

**The standard direct materials cost per unit is the standard direct materials price times the standard direct materials quantity.** For Xonic, the standard direct materials cost per gallon of Xonic Tonic is $12.00 ($3 × 4 pounds).

**Direct Labor.** The **direct labor price standard** is the rate per hour that should be incurred for direct labor (see **Alternative Terminology**). This standard is based on current wage rates, adjusted for anticipated changes such as cost of living adjustments (COLAs). The price standard also generally includes employer payroll taxes and fringe benefits, such as paid holidays and vacations. For Xonic, the direct labor price standard is as shown in **Illustration 26.4**.

**ALTERNATIVE TERMINOLOGY**
The direct labor price standard is also called the *direct labor rate standard*.

**ILLUSTRATION 26.4**
**Setting direct labor price standard**

| Item | Price |
|---|---|
| Hourly wage rate | $12.50 |
| COLA | 0.25 |
| Payroll taxes | 0.75 |
| Fringe benefits | 1.50 |
| **Standard direct labor rate per hour** | **$15.00** |

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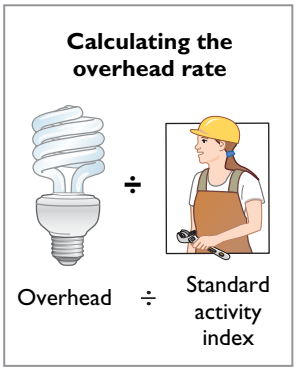
**ALTERNATIVE TERMINOLOGY**

The direct labor quantity standard is also called the *direct labor efficiency standard*.

The **direct labor quantity standard** is the time that management determines should be required to make one unit of the product (see **Alternative Terminology**). This standard is especially critical in labor-intensive companies. Allowances should be made in this standard for rest periods, cleanup, machine setup, and machine downtime. **Illustration 26.5** shows the direct labor quantity standard for Xonic.

**ILLUSTRATION 26.5**
**Setting direct labor quantity standard**

| Item | Quantity (Hours) |
|---|---|
| Actual production time | 1.5 |
| Rest periods and cleanup | 0.2 |
| Setup and downtime | 0.3 |
| **Standard direct labor hours per unit** | **2.0** |




**The standard direct labor cost per unit of finished product is the standard direct labor rate times the standard direct labor hours.** For Xonic, the standard direct labor cost per gallon is $30 ($15 × 2 hours).

**Manufacturing Overhead.** For manufacturing overhead, companies use a **standard predetermined overhead rate** in setting the standard. This overhead rate is determined by dividing budgeted overhead costs by an expected standard activity index. For example, the index may be standard direct labor hours or standard machine hours.

Many companies employ activity-based costing (ABC) to allocate overhead costs. Because ABC uses multiple activity indices to allocate overhead costs, it results in a better correlation between activities and costs incurred than do other methods. As a result, the use of ABC can significantly improve the usefulness of standard costing for management decision-making.

Xonic uses standard direct labor hours as the activity index. The company expects to produce 13,200 gallons of Xonic Tonic during the year at normal capacity. **Normal capacity** is the average activity output that a company should experience over the long run. Since it takes two direct labor hours for each gallon, total standard direct labor hours are 26,400 (13,200 gallons × 2 hours).

At normal capacity of 26,400 direct labor hours, overhead costs are budgeted to be $132,000. Of that amount, $79,200 are variable and $52,800 are fixed. **Illustration 26.6** shows computation of the standard predetermined overhead rates for Xonic.

**ILLUSTRATION 26.6**
**Computing predetermined overhead rates**

| Budgeted Overhead Costs | Amount | ÷ | Standard Direct Labor Hours | = | Overhead Rate per Direct Labor Hour |
|---|---|---|---|---|---|
| Variable | $ 79,200 | | 26,400 | | $3.00 |
| Fixed | 52,800 | | 26,400 | | 2.00 |
| Total | $132,000 | | 26,400 | | **$5.00** |

**The standard manufacturing overhead cost per unit is the predetermined overhead rate times the activity index quantity standard.** For Xonic, which uses direct labor hours as its activity index, the standard manufacturing overhead cost per gallon of Xonic Tonic is $10 ($5 × 2 hours).

**Total Standard Cost per Unit.** After a company has established the standard quantity and price per unit of finished product for each cost element, it can determine the total standard cost. The total standard cost per unit is the sum of the standard costs of direct materials, direct labor, and manufacturing overhead. The total standard cost per gallon of Xonic Tonic is $52, as the standard cost card in **Illustration 26.7** shows.

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**Product: Xonic Tonic** **Unit Measure: Gallon**

| Manufacturing Cost Elements | Standard Quantity | × | Standard Price | = | Standard Cost |
|---|---|---|---|---|---|
| Direct materials | 4 pounds | | $ 3.00 | | $12.00 |
| Direct labor | 2 hours | | $15.00 | | 30.00 |
| Manufacturing overhead | 2 hours | | $ 5.00 | | 10.00 |
| | | | | | $52.00 |

**ILLUSTRATION 26.7**
**Standard cost per gallon of Xonic Tonic**

The company prepares a standard cost card for each product. This card provides the basis for determining variances from standards.

## DO IT! 1 | Standard Costs

Ridette Inc. accumulated the following standard cost data concerning product Cty31.

Direct materials per unit: 1.5 pounds at $4 per pound
Direct labor per unit: 0.25 hours at $13 per hour.
Manufacturing overhead: allocated based on direct labor hours at a predetermined rate of $15.60 per direct labor hour.

Compute the standard cost of one unit of product Cty31.

**ACTION PLAN**

- Know that standard costs are predetermined unit costs.
- To establish the standard cost of producing a product, establish the standard for each manufacturing cost element—direct materials, direct labor, and manufacturing overhead.
- Compute the standard cost for each element from the standard price to be paid and the standard quantity to be used.

**Solution**

| Manufacturing Cost Element | Standard Quantity | × | Standard Price | = | Standard Cost |
|---|---|---|---|---|---|
| Direct materials | 1.5 pounds | | $ 4.00 | | $ 6.00 |
| Direct labor | 0.25 hours | | $13.00 | | 3.25 |
| Manufacturing overhead | 0.25 hours | | $15.60 | | 3.90 |
| Total | | | | | $13.15 |

Related exercise material: **BE26.2, BE26.3, DO IT! 26.1, E26.1, E26.2, and E26.3.**

# Direct Materials Variances

**LEARNING OBJECTIVE 2**
Determine direct materials variances.

## Analyzing and Reporting Variances

One of the major management uses of standard costs is to identify variances from standards. **Variances** are the differences between total actual costs and total standard costs (see **Alternative Terminology**).

To illustrate, assume that in producing 1,000 gallons of Xonic Tonic in the month of June, Xonic incurred the costs listed in **Illustration 26.8**.

**ALTERNATIVE TERMINOLOGY**
In business, the term *variance* is also used to indicate differences between total budgeted and total actual costs.

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**ILLUSTRATION 26.8**
**Actual production costs**

| | |
|---|---|
| Direct materials | $13,020 |
| Direct labor | 31,080 |
| Variable overhead | 6,500 |
| Fixed overhead | 4,400 |
| Total actual costs | $55,000 |

Companies determine total standard costs by multiplying the units produced by the standard cost per unit. The total standard cost of Xonic Tonic is $52,000 (1,000 gallons × $52). Thus, the total variance is $3,000, as shown in **Illustration 26.9**.

**ILLUSTRATION 26.9**
**Computation of total variance**

| | |
|---|---|
| Actual costs | $55,000 |
| Less: Standard costs | 52,000 |
| **Total variance** | **$ 3,000** |

Note that the variance is expressed in total dollars, not on a per unit basis.

When actual costs exceed standard costs, the variance is **unfavorable**. The $3,000 variance in June for Xonic Tonic is unfavorable. An unfavorable variance has a negative connotation as it reduces profit. It suggests that the company paid too much for one or more of the manufacturing cost elements or that it used the elements inefficiently.

If actual costs are less than standard costs, the variance is **favorable**. A favorable variance has a positive connotation. It suggests efficiencies in incurring manufacturing costs and in using direct materials, direct labor, and manufacturing overhead.

However, be careful: A favorable variance could be obtained by using inferior materials. In printing wedding invitations, for example, a favorable variance could result from using an inferior grade of paper. Or, a favorable variance might be achieved in installing tires on an automobile assembly line by tightening only half of the lug bolts. A variance is not favorable if the company has sacrificed quality control standards.

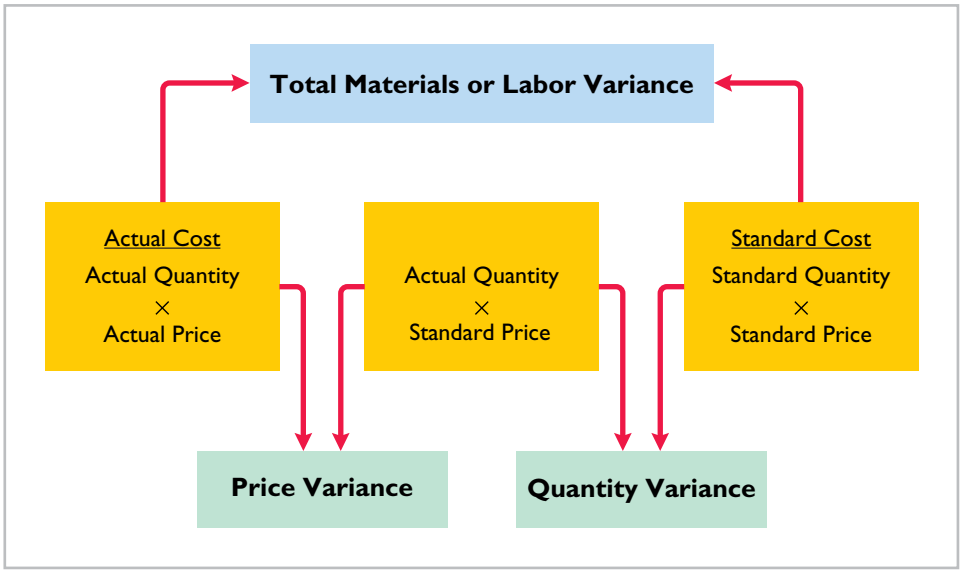
To interpret a variance, you must analyze its components. A variance can result from differences related to the cost of materials, labor, or overhead. **Illustration 26.10** shows that the total variance is the sum of the materials, labor, and overhead variances.

**ILLUSTRATION 26.10**
**Components of total variance**

**Materials Variance + Labor Variance + Overhead Variance = Total Variance**

In the following discussion, you will see that the materials variance and the labor variance are the sum of variances resulting from price differences and quantity differences. **Illustration 26.11** shows a format for computing the price and quantity variances.

**ILLUSTRATION 26.11**
**Breakdown of materials or labor variance into price and quantity variances**



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Note that the left side of the matrix is actual cost (actual quantity times actual price). The right hand is standard cost (standard quantity times standard price). The difference between these two amounts (shown in the blue box in Illustration 26.11) is the total materials or labor variance. The only additional element you need in order to compute the price and quantity variances is the middle element, the actual quantity at the standard price.

To compute the price variance, we hold the quantity constant (at the actual quantity) but vary the price (actual versus standard). Similarly, to compute the quantity variance, we hold the price constant (at the standard price) but vary the quantity (actual versus standard).

## Calculating Direct Materials Variances

Part of Xonic's total variance of $3,000 is due to a materials variance. In completing the order for 1,000 gallons of Xonic Tonic, the company used 4,200 pounds of direct materials. From Illustration 26.3, we know that Xonic's standards require it to use 4 pounds of materials per gallon produced, so it should have only used 4,000 (4 × 1,000) pounds of direct materials to produce 1,000 gallons. The direct materials were purchased at a price of $3.10 per unit. Illustration 26.2 shows that the standard cost of each pound of direct materials is $3 instead of the $3.10 actually paid. **Illustration 26.12** shows that the **total materials variance** is computed as the difference between the amount paid (actual quantity times actual price) and the amount that should have been paid based on standards (standard quantity times standard price of materials).

| Actual Quantity × Actual Price | – | Standard Quantity × Standard Price | = | Total Materials Variance |
|---|---|---|---|---|
| **(AQ) × (AP)** | | **(SQ) × (SP)** | | **(TMV)** |
| (4,200 × $3.10) | – | (4,000* × $3.00) | | |
| $13,020 | – | $12,000 | = | $1,020 U |

*1,000 units × 4 pounds

**ILLUSTRATION 26.12**
**Formula for total materials variance**

Thus, for Xonic, the total materials variance is $1,020 ($13,020 – $12,000) unfavorable (abbreviated as "U"). It is unfavorable because the actual cost exceeded the standard cost.

The total materials variance could be caused by differences in the price paid for the materials or by differences in the amount of materials used. **Illustration 26.13** shows that the total materials variance is the sum of the materials price variance and the materials quantity variance.

| Materials Price Variance | + | Materials Quantity Variance | = | Total Materials Variance |
|---|---|---|---|---|

**ILLUSTRATION 26.13**
**Components of total materials variance**

The materials price variance results from a difference between the actual price and the standard price. **Illustration 26.14** shows that the **materials price variance** is computed as the difference between the actual amount paid (actual quantity of materials times actual price) and the standard amount that should have been paid for the materials used (actual quantity of materials times standard price).[1]

| Actual Quantity × Actual Price | – | Actual Quantity × Standard Price | = | Materials Price Variance |
|---|---|---|---|---|
| **(AQ) × (AP)** | | **(AQ) × (SP)** | | **(MPV)** |
| (4,200 × $3.10) | – | (4,200 × $3.00) | | |
| $13,020 | – | $12,600 | = | $420 U |

**ILLUSTRATION 26.14**
**Formula for materials price variance**

For Xonic, the materials price variance is $420 ($13,020 – $12,600) unfavorable.

[1]Assume that all materials purchased during the period are used in production and that no units remain in inventory at the end of the period.

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**HELPFUL HINT**
**The alternative formula is:**
AQ × AP − SP = MPV

The price variance can also be computed by multiplying the actual quantity purchased by the difference between the actual and standard price per unit (see **Helpful Hint**). The computation in this case is 4,200 × ($3.10 − $3.00) = $420 U.

As seen in Illustration 26.13, the other component of the materials variance is the quantity variance. The quantity variance results from differences between the amount of material actually used and the amount that should have been used. As shown in **Illustration 26.15**, the **materials quantity variance** is computed as the difference between the standard cost of the actual quantity (actual quantity times standard price) and the standard cost of the amount that should have been used (standard quantity times standard price for materials).

**ILLUSTRATION 26.15**
**Formula for materials quantity variance**

| Actual Quantity × Standard Price | – | Standard Quantity × Standard Price | = | Materials Quantity Variance |
|---|---|---|---|---|
| (AQ) × (SP) | | (SQ) × (SP) | | (MQV) |
| (4,200 × $3.00) | – | (4,000 × $3.00) | | |
| $12,600 | – | $12,000 | = | $600 U |

**HELPFUL HINT**
**The alternative formula is:**
SP × AQ − SQ = MQV

Thus, for Xonic, the materials quantity variance is $600 ($12,600 − $12,000) unfavorable.

The quantity variance can also be computed by applying the standard price to the difference between actual and standard quantities used (see **Helpful Hint**). The computation in this example is $3.00 × (4,200 − 4,000) = $600 U.

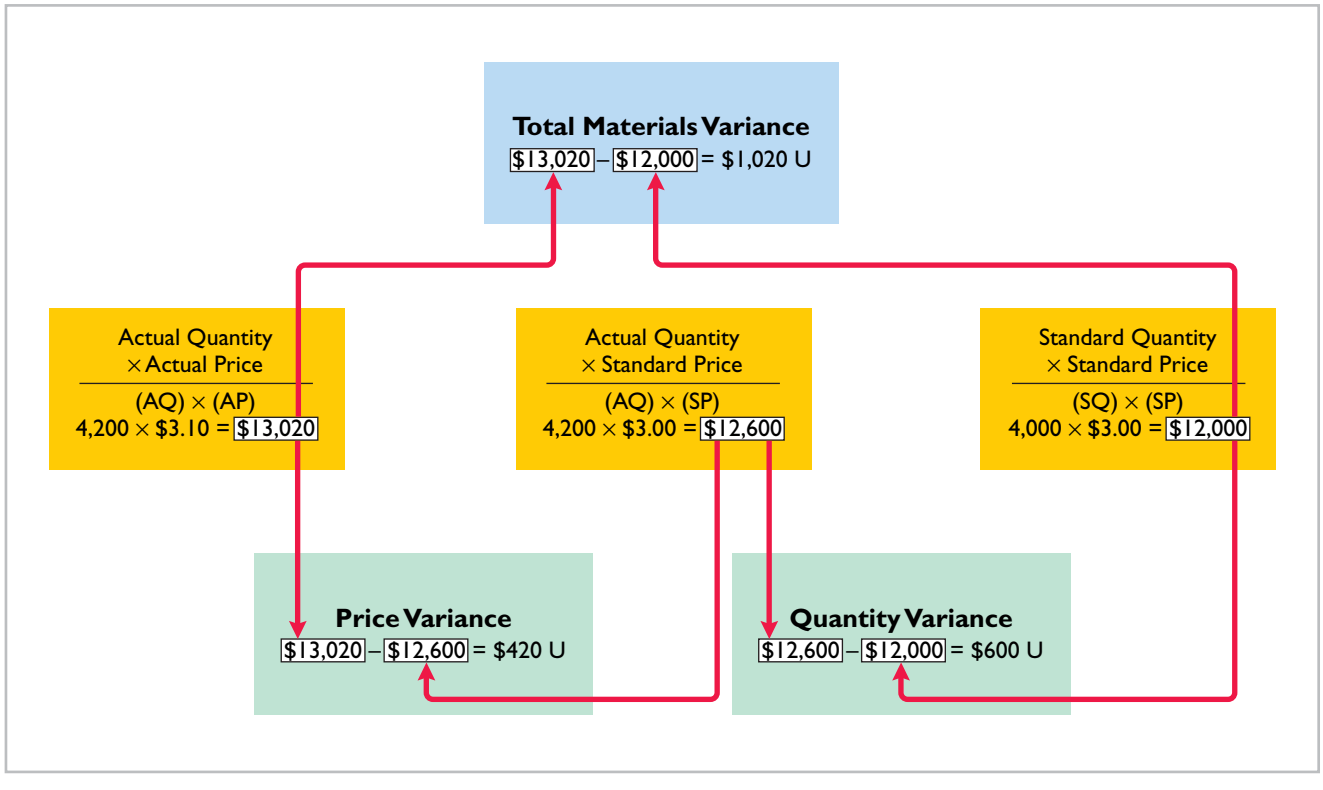
**Illustration 26.16** summarizes the total materials variance of $1,020 U.

**ILLUSTRATION 26.16**
**Summary of materials variances**

| | |
|---|---|
| Materials price variance | $ 420 U |
| Materials quantity variance | 600 U |
| **Total materials variance** | **$1,020 U** |

Companies sometimes use a matrix to analyze a variance. **When the matrix is used, a company computes the amounts using the formulas for each cost element first and then computes the variances.** **Illustration 26.17** shows the completed matrix for the direct materials variance for Xonic. The matrix provides a convenient structure for determining each variance.

**ILLUSTRATION 26.17** **Matrix for direct materials variances**


Total Materials Variance
$13,020 – $12,000 = $1,020 U
Actual Quantity × Actual Price
(AQ) × (AP)
4,200 × $3.10 = $13,020
Actual Quantity × Standard Price
(AQ) × (SP)
4,200 × $3.00 = $12,600
Standard Quantity × Standard Price
(SQ) × (SP)
4,000 × $3.00 = $12,000
Price Variance
$13,020 – $12,600 = $420 U
Quantity Variance
$12,600 – $12,000 = $600 U

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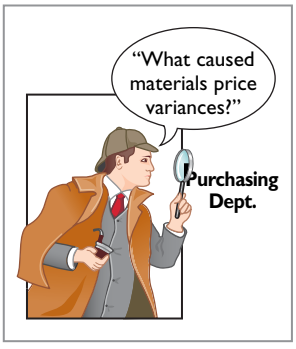
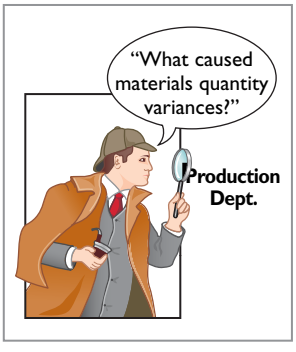
### Causes of Materials Variances

What are the causes of a variance? The causes may relate to both internal and external factors. The investigation of a **materials price variance usually begins in the purchasing department**. Many factors affect the price paid for raw materials. These include availability of quantity and cash discounts, the quality of the materials requested, and the delivery method used. To the extent that these factors are considered in setting the price standard, the purchasing department is responsible for any variances.

However, a variance may be beyond the control of the purchasing department. Sometimes, for example, prices may rise faster than expected. Moreover, actions by groups over which the company has no control, such as the OPEC nations' oil price increases, may cause an unfavorable variance. For example, during a recent year, **Kraft Foods** and **Kellogg Company** both experienced unfavorable materials price variances when the cost of dairy and wheat products jumped unexpectedly. There are also times when a production department may be responsible for the price variance. This may occur when a rush order forces the company to pay a higher price for the materials.

The starting point for determining the cause(s) of a significant **materials quantity variance is in the production department**. If the variances are due to inexperienced workers, faulty machinery, or carelessness, the production department is responsible. However, if the materials obtained by the purchasing department were of inferior quality, then the purchasing department is responsible.




### DO IT! 2 | Direct Materials Variances

The standard cost of Wonder Walkers includes two units of direct materials at $8.00 per unit. During July, the company buys 22,000 units of direct materials at $7.50 and uses those materials to produce 10,000 Wonder Walkers. Compute the total, price, and quantity variances for materials.

**ACTION PLAN**

- Use the formulas for computing each of the materials variances:
- Total materials variance = (AQ × AP) – (SQ × SP)
- Materials price variance = (AQ × AP) – (AQ × SP)
- Materials quantity variance = (AQ × SP) – (SQ × SP)

**Solution**

Standard quantity = 10,000 × 2 = 20,000
Substituting amounts into the formulas, the variances are:

Total materials variance = (22,000 × $7.50) − (20,000 × $8.00) = $5,000 unfavorable
Materials price variance = (22,000 × $7.50) − (22,000 × $8.00) = $11,000 favorable
Materials quantity variance = (22,000 × $8.00) − (20,000 × $8.00) = $16,000 unfavorable

Related exercise material: **BE26.4, DO IT! 26.2, and E26.5.**

# Direct Labor and Manufacturing Overhead Variances

**LEARNING OBJECTIVE 3**

Determine direct labor and total manufacturing overhead variances.

## Direct Labor Variances

The process of determining direct labor variances is the same as for determining the direct materials variances. In completing the Xonic Tonic order, the company incurred 2,100 direct labor hours. The standard hours allowed for the units produced were 2,000 hours (1,000

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gallons × 2 hours). The standard labor rate was $15 per hour, and the actual labor rate was $14.80.

The total labor variance is the difference between the amount actually paid for labor versus the amount that should have been paid. **Illustration 26.18** shows that the **total labor variance** is computed as the difference between the amount actually paid for labor (actual hours times actual rate) and the amount that should have been paid (standard hours times standard rate for labor).

**ILLUSTRATION 26.18**
**Formula for total labor variance**

| Actual Hours × Actual Rate | – | Standard Hours × Standard Rate | = | Total Labor Variance |
|---|---|---|---|---|
| (AH) × (AR) | | (SH) × (SR) | | (TLV) |
| (2,100 × $14.80) | – | (2,000 × $15.00) | | |
| $31,080 | – | $30,000 | = | $1,080 U |

The total labor variance is $1,080 ($31,080 − $30,000) unfavorable.

The total labor variance is caused by differences in the labor rate or difference in labor hours. **Illustration 26.19** shows that the total labor variance is the sum of the labor price variance and the labor quantity variance.

**ILLUSTRATION 26.19**
**Components of total labor variance**

| Labor Price Variance | + | Labor Quantity Variance | = | Total Labor Variance |
|---|---|---|---|---|

The labor price variance results from the difference between the rate paid to workers versus the rate that was supposed to be paid. **Illustration 26.20** shows that the **labor price variance** is computed as the difference between the actual amount paid (actual hours times actual rate) and the amount that should have been paid for the number of hours worked (actual hours times standard rate for labor).

**ILLUSTRATION 26.20**
**Formula for labor price variance**

| Actual Hours × Actual Rate | – | Actual Hours × Standard Rate | = | Labor Price Variance |
|---|---|---|---|---|
| (AH) × (AR) | | (AH) × (SR) | | (LPV) |
| (2,100 × $14.80) | – | (2,100 × $15.00) | | |
| $31,080 | – | $31,500 | = | $420 F |

For Xonic, the labor price variance is $420 ($31,080 − $31,500) favorable.

**HELPFUL HINT**
The alternative formula is:
AH × AR − SR = LPV

The labor price variance can also be computed by multiplying actual hours worked by the difference between the actual pay rate and the standard pay rate (see **Helpful Hint**). The computation in this example is 2,100 × ($15.00 − $14.80) = $420 F.

The other component of the total labor variance is the labor quantity variance. The labor quantity variance results from the difference between the actual number of labor hours and the number of hours that should have been worked for the quantity produced. **Illustration 26.21** shows that the **labor quantity variance** is computed as the difference between the amount that should have been paid for the hours worked (actual hours times standard rate) and the amount that should have been paid for the amount of hours that should have been worked (standard hours times standard rate for labor).

**ILLUSTRATION 26.21**
**Formula for labor quantity variance**

| Actual Hours × Standard Rate | – | Standard Hours × Standard Rate | = | Labor Quantity Variance |
|---|---|---|---|---|
| (AH) × (SR) | | (SH) × (SR) | | (LQV) |
| (2,100 × $15.00) | – | (2,000 × $15.00) | | |
| $31,500 | – | $30,000 | = | $1,500 U |

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Thus, for Xonic, the labor quantity variance is $1,500 ($31,500 − $30,000) unfavorable.

The same result can be obtained by multiplying the standard rate by the difference between actual hours worked and standard hours allowed (see **Helpful Hint**). In this case, the computation is $15.00 × (2,100 − 2,000) = $1,500 U.

**Illustration 26.22** summarizes the total direct labor variance of $1,080 U.

**HELPFUL HINT**

**The alternative formula is:**

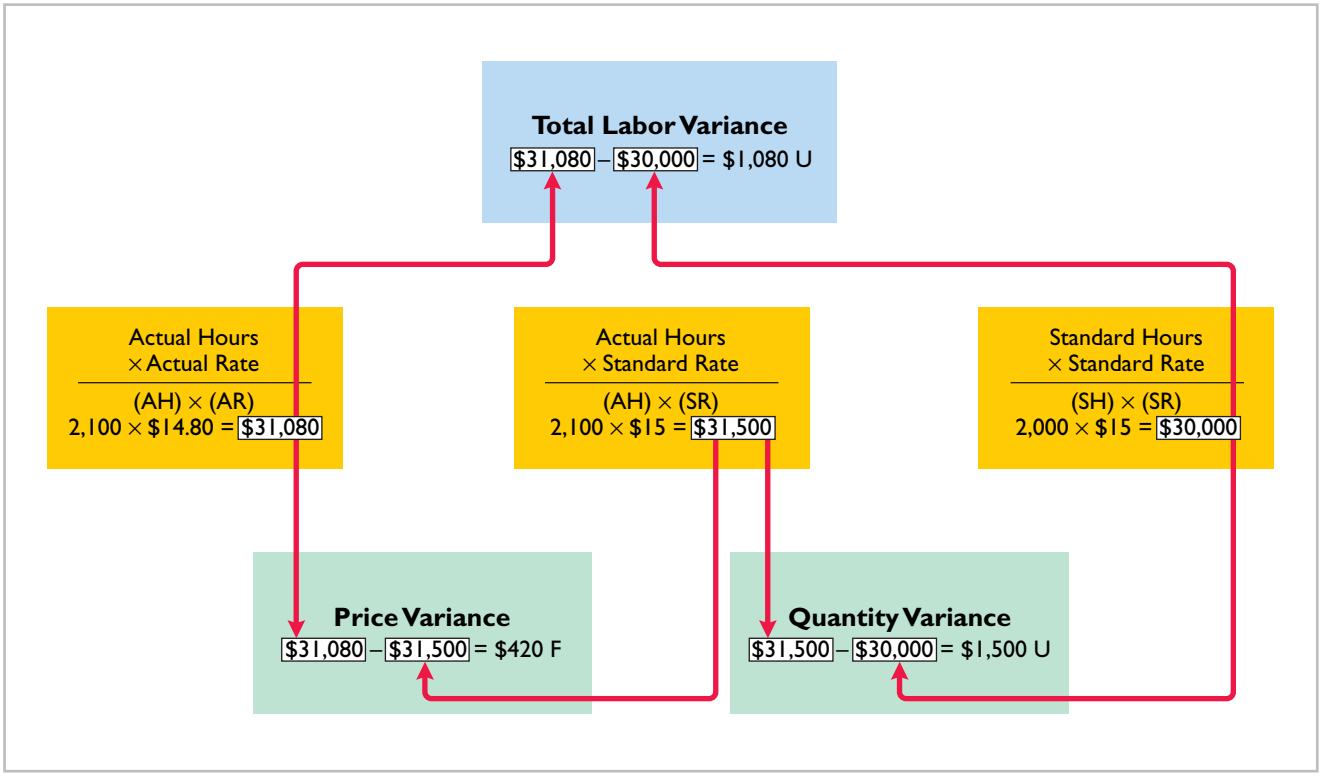
SR × AH − SH = LQV

| | |
|---|---|
| Labor price variance | $ 420 F |
| Labor quantity variance | 1,500 U |
| **Total direct labor variance** | **$1,080 U** |

**ILLUSTRATION 26.22**
**Summary of labor variances**

These results can also be obtained from the matrix in **Illustration 26.23**.

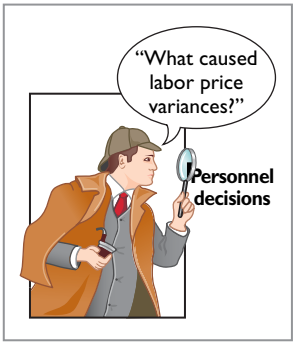
**ILLUSTRATION 26.23** **Matrix for direct labor variances**


Total Labor Variance
$31,080 – $30,000 = $1,080 U
Actual Hours × Actual Rate
(AH) × (AR)
2,100 × $14.80 = $31,080
Actual Hours × Standard Rate
(AH) × (SR)
2,100 × $15 = $31,500
Standard Hours × Standard Rate
(SH) × (SR)
2,000 × $15 = $30,000
Price Variance
$31,080 – $31,500 = $420 F
Quantity Variance
$31,500 – $30,000 = $1,500 U

## Causes of Labor Variances

**Labor price variances** usually result from two factors: (1) paying workers **different wages than expected**, and (2) **misallocation of workers**. In companies where pay rates are determined by union contracts, labor price variances should be infrequent. When workers are not unionized, there is a much higher likelihood of such variances. The responsibility for these variances rests with the manager who authorized the wage change.

Misallocation of the workforce refers to using skilled workers in place of unskilled workers and vice versa. The use of an inexperienced worker instead of an experienced one will result in a favorable price variance because of the lower pay rate of the unskilled worker. An unfavorable price variance would result if a skilled worker were substituted for an inexperienced one. The production department generally is responsible for labor price variances resulting from misallocation of the workforce.



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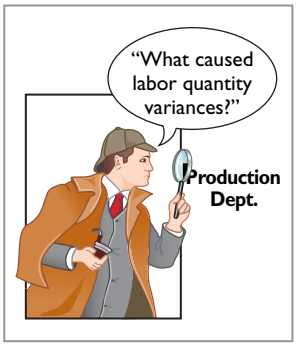



**Labor quantity variances** relate to the **efficiency of workers**. The cause of a quantity variance generally can be traced to the production department. The causes of an unfavorable variance may be poor training, worker fatigue, faulty machinery, or carelessness. These causes are the responsibility of the **production department**. However, if the excess time is due to inferior materials, the responsibility falls outside the production department and resides instead with the purchasing department.

## Manufacturing Overhead Variances

The **total overhead variance** is the difference between the actual overhead costs and overhead costs applied based on standard hours allowed for the amount of goods produced. As indicated in Illustration 26.8, Xonic incurred overhead costs of $10,900 to produce 1,000 gallons of Xonic Tonic in June. The computation of the actual overhead is comprised of a variable and a fixed component. **Illustration 26.24** shows this computation.

**ILLUSTRATION 26.24**
**Actual overhead costs**

| | |
|---|---|
| Variable overhead | $ 6,500 |
| Fixed overhead | 4,400 |
| **Total actual overhead** | **$10,900** |

To find the total overhead variance in a standard costing system, we determine the overhead costs applied based on standard hours allowed. **Standard hours allowed** are the hours that *should* have been worked for the units produced. Overhead costs for Xonic Tonic are applied based on direct labor hours. Because it takes two hours of direct labor to produce one gallon of Xonic Tonic, for the 1,000-gallon Xonic Tonic order, the standard hours allowed are 2,000 hours (1,000 gallons × 2 hours). We then apply the predetermined overhead rate to the 2,000 standard hours allowed.

Recall from Illustration 26.6 that the amount of budgeted overhead costs at normal capacity of $132,000 was divided by normal capacity of 26,400 direct labor hours, to arrive at a predetermined overhead rate of $5 ($132,000 ÷ 26,400). The predetermined rate of $5 is then multiplied by the 2,000 standard hours allowed, to determine the overhead costs applied.

**Illustration 26.25** shows the formula for the total overhead variance and the calculation for Xonic for the month of June.

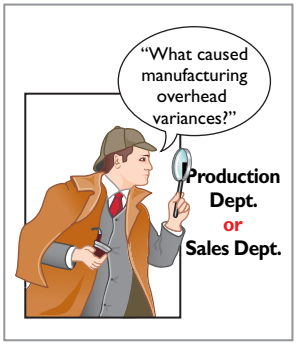
**ILLUSTRATION 26.25**
**Formula for total overhead variance**

| Actual Overhead | – | Overhead Applied* | = | Total Overhead Variance |
|---|---|---|---|---|
| $10,900 ($6,500 + $4,400) | – | $10,000 ($5 × 2,000 hours) | = | $900 U |

*Based on standard hours allowed.

Thus, for Xonic, the total overhead variance is $900 unfavorable.

The overhead variance is generally analyzed through a price and a quantity variance. (These computations are discussed in more detail in advanced courses.) The name usually given to the price variance is the **overhead controllable variance**; the quantity variance is referred to as the **overhead volume variance**. Appendix 26B discusses how the total overhead variance can be broken down into these two variances.




### Causes of Manufacturing Overhead Variances

One reason for an overhead variance relates to over- or underspending on overhead items. For example, overhead may include indirect labor for which a company paid wages higher than the standard labor price allowed. Or, the price of electricity to run the company's machines increased, and the company did not anticipate this additional cost. Companies should investigate any spending variances to determine whether they will continue in the future. Generally, the responsibility for these variances rests with the production department.

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The overhead variance can also result from the inefficient use of overhead. For example, because of poor maintenance, a number of the manufacturing machines are experiencing breakdowns on a consistent basis, leading to reduced production. Or, the flow of materials through the production process is impeded because of a lack of skilled labor to perform the necessary production tasks, due to a lack of planning. In both of these cases, the production department is responsible for the cause of these variances. On the other hand, overhead can also be underutilized because of a lack of sales orders. When the cause is a lack of sales orders, the responsibility rests outside the production department and resides instead with the sales department. For example, at one point **Chrysler** experienced a very significant unfavorable overhead variance because plant capacity was maintained at excessively high levels, due to overly optimistic sales forecasts.

## People, Planet, and Profit Insight Starbucks

Archer Colin/SIPA/NewsCom

### What's Brewing at Starbucks?

It's easy for a company to say it's committed to corporate social responsibility. But **Starbucks** actually spells out measurable goals. Recently, the company published its annual *Global Responsibility Report* in which it describes its goals, achievements, and even its shortcomings related to corporate social responsibility. For example, Starbucks achieved its goal of getting more than 50% of its electricity from renewable sources. It also has numerous goals related to purchasing coffee from sources that are certified as responsibly grown and ethically traded; providing funds for loans to coffee farmers; and fostering partnerships with **Conservation International** to provide training to farmers on ecologically friendly growing.

The report also candidly explains that the company did not meet its goal to cut energy consumption by 25%. It also fell far short of its goal of getting customers to reuse their cups. In those instances where it didn't achieve its goals, Starbucks set new goals and described steps it would take to achieve them. You can view the company's *Global Responsibility Report* at *www.starbucks.com*.

**Source:** "Starbucks Launches 10th Global Responsibility Report," *Business Wire* (April 18, 2011).

**What implications does Starbucks' commitment to corporate social responsibility have for the standard cost of a cup of coffee? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 3 | Labor and Manufacturing Overhead Variances

The standard cost of Product YY includes 3 hours of direct labor at $12.00 per hour. The predetermined overhead rate is $20.00 per direct labor hour. During July, the company incurred 3,500 hours of direct labor at an average rate of $12.40 per hour and $71,300 of manufacturing overhead costs. It produced 1,200 units.

**a.** Compute the total, price, and quantity variances for labor.

**b.** Compute the total overhead variance.

### Solution

Substituting amounts into the formulas, the variances are:

Total labor variance = (3,500 × $12.40) − (3,600 × $12.00) = $200 unfavorable

Labor price variance = (3,500 × $12.40) − (3,500 × $12.00) = $1,400 unfavorable

Labor quantity variance = (3,500 × $12.00) − (3,600 × $12.00) = $1,200 favorable

Total overhead variance = $71,300 − $72,000* = $700 favorable

*(1,200 × 3 hours) × $20.00

Related exercise material: **BE26.5, BE26.6, DO IT! 26.3, E26.4, E26.6, E26.7, E26.8, and E26.11.**

### ACTION PLAN

- **Use the formulas for computing each of the variances:**

  **Total labor variance = (AH × AR) – (SH × SR)**
  **Labor price variance = (AH × AR) – (AH × SR)**
  **Labor quantity variance = (AH × SR) – (SH × SR)**
  **Total overhead variance = Actual overhead – Overhead applied***

***Based on standard hours allowed.**

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# Variance Reports and Balanced Scorecards

**LEARNING OBJECTIVE 4**

Prepare variance reports and balanced scorecards.

## Reporting Variances

All variances should be reported to appropriate levels of management as soon as possible. The sooner managers are informed, the sooner they can evaluate problems and take corrective action.

The form, content, and frequency of variance reports vary considerably among companies. One approach is to prepare a weekly report for each department that has primary responsibility for cost control. Under this approach, materials price variances are reported to the purchasing department, and all other variances are reported to the production department that did the work. The report for Xonic shown in Illustration 26.26, with the materials for the Xonic Tonic order listed first, illustrates this approach.

**ILLUSTRATION 26.26**
**Materials price variance report**

**Xonic**
**Variance Report—Purchasing Department**
**For Week Ended June 8, 2020**

| Type of Materials | Quantity Purchased | Actual Price | Standard Price | Price Variance | Explanation |
|---|---|---|---|---|---|
| X100 | 4,200 lbs. | $3.10 | $3.00 | $420 U | Rush order |
| X142 | 1,200 units | 2.75 | 2.80 | 60 F | Quantity discount |
| A85 | 600 doz. | 5.20 | 5.10 | 60 U | Regular supplier on strike |
| **Total price variance** | | | | **$420 U** | |

The explanation column is completed after consultation with the purchasing department manager.

Variance reports facilitate the principle of "management by exception" explained in Chapter 25. For example, the vice president of purchasing can use the report shown above to evaluate the effectiveness of the purchasing department manager. Or, the vice president of production can use production department variance reports to determine how well each production manager is controlling costs. In using variance reports, top management normally looks for **significant variances**. These may be judged on the basis of some quantitative measure, such as more than 10% of the standard or more than $1,000.

## Income Statement Presentation of Variances

In income statements **prepared for management** under a standard cost accounting system, **cost of goods sold is stated at standard cost and the variances are disclosed separately**. Unfavorable variances increase cost of goods sold, while favorable variances decrease cost of goods sold. Illustration 26.27 shows the presentation of variances in an income statement. This income statement is based on the production and sale of 1,000 units of Xonic Tonic at $70 per unit. It also assumes selling and administrative costs of $3,000. Observe that each variance is shown, as well as the total net variance. In this example, variations from standard costs reduced net income by $3,000.

Standard costs may be used in financial statements prepared for stockholders and other external users. The costing of inventories at standard costs is in accordance with generally accepted accounting principles when there are no significant differences between actual costs and standard costs. **Hewlett-Packard** and **Jostens, Inc.**, for example, report their inventories at standard costs. However, if there are significant differences between actual and standard costs, the financial statements must report inventories and cost of goods sold at actual costs.

It is also possible to show the variances in an income statement prepared in the variable costing (CVP) format. To do so, it is necessary to analyze the overhead variances into variable and fixed components. This type of analysis is explained in cost accounting texts.

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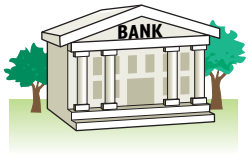
**ILLUSTRATION 26.27** **Variances in income statement for management**

| Xonic<br>Income Statement<br>For the Month Ended June 30, 2020 | | |
|---|---|---|
| Sales revenue | | $70,000 |
| Cost of goods sold (at standard) | | 52,000 |
| Gross profit (at standard) | | 18,000 |
| **Variances** | | |
| **Materials price** | **$ 420 U** | |
| **Materials quantity** | **600 U** | |
| **Labor price** | **420 F** | |
| **Labor quantity** | **1,500 U** | |
| **Overhead** | **900 U** | |
| **Total variance unfavorable** | | **3,000** |
| Gross profit (actual) | | 15,000 |
| Selling and administrative expenses | | 3,000 |
| Net income | | $12,000 |

## Balanced Scorecard

Financial measures (measurement of dollars), such as variance analysis and return on investment (ROI), are useful tools for evaluating performance. However, many companies now supplement these financial measures with nonfinancial measures to better assess performance and anticipate future results. For example, airlines like **Delta** and **United** use capacity utilization as an important measure to understand and predict future performance. Companies that publish the *New York Times* and the *Chicago Tribune* newspapers use circulation figures as another measure by which to assess performance. **Penske Automotive Group**, the owner of 300 dealerships, rewards executives for meeting employee retention targets. **Illustration 26.28** lists some key nonfinancial measures used in various industries.

**ILLUSTRATION 26.28** **Nonfinancial measures used in various industries**

| Industry | Measure |
|---|---|
| **Automobiles** | Capacity utilization of plants.<br>Average age of key assets.<br>Impact of strikes.<br>Brand-loyalty statistics. |
| **Computer Systems** | Market profile of customer end-products.<br>Number of new products.<br>Employee stock ownership percentages.<br>Number of scientists and technicians used in R&D. |
| **Chemicals** | Customer satisfaction data.<br>Factors affecting customer product selection.<br>Number of patents and trademarks held.<br>Customer brand awareness. |
| **Regional Banks**   | Number of ATMs by state.<br>Number of products used by average customer.<br>Percentage of customer service calls handled by interactive voice response units.<br>Personnel cost per employee.<br>Credit card retention rates. |

*Source:* Financial Accounting Standards Board, *Business Reporting: Insights into Enhancing Voluntary Disclosures* (Norwalk, Conn.: FASB, 2001).

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Most companies recognize that both financial and nonfinancial measures can provide useful insights into what is happening in the company. As a result, many companies now use a broad-based measurement approach, called the **balanced scorecard**, to evaluate performance. The **balanced scorecard** incorporates financial and nonfinancial measures in an integrated system that links performance measurement with a company's strategic goals. Nearly 50% of the largest companies in the United States, including **Unilever**, **Chase**, and **Wal-Mart Stores Inc.**, are using the balanced scorecard approach.

The balanced scorecard evaluates company performance from a series of "perspectives." The four most commonly employed perspectives are as follows.

1. The **financial perspective** is the most traditional view of the company. It employs financial measures of performance used by most firms.
2. The **customer perspective** evaluates the company from the viewpoint of those people who buy its products or services. This view compares the company to competitors in terms of price, quality, product innovation, customer service, and other dimensions.
3. The **internal process perspective** evaluates the internal operating processes critical to success. All critical aspects of the value chain—including product development, production, delivery, and after-sale service—are evaluated to ensure that the company is operating effectively and efficiently.
4. The **learning and growth perspective** evaluates how well the company develops and retains its employees. This would include evaluation of such things as employee skills, employee satisfaction, training programs, and information dissemination.

Within each perspective, the balanced scorecard identifies objectives that contribute to attainment of strategic goals. **Illustration 26.29** shows examples of objectives within each perspective.

**ILLUSTRATION 26.29** **Examples of objectives within the four perspectives of balanced scorecard**

| Perspective | | Objective |
|---|---|---|
| **Financial** | | Return on assets.<br>Net income.<br>Credit rating.<br>Share price.<br>Profit per employee. |
| **Customer** | | Percentage of customers who would recommend product.<br>Customer retention.<br>Response time per customer request.<br>Brand recognition.<br>Customer service expense per customer. |
| **Internal Process** | | Percentage of defect-free products.<br>Stockouts.<br>Labor utilization rates.<br>Waste reduction.<br>Planning accuracy. |
| **Learning and Growth** | | Percentage of employees leaving in less than one year.<br>Number of cross-trained employees.<br>Ethics violations.<br>Training hours.<br>Reportable accidents. |

The objectives are linked across perspectives in order to tie performance measurement to company goals. The financial-perspective objectives are normally set first, and then objectives are set in the other perspectives in order to accomplish the financial goals.

For example, within the financial perspective, a common goal is to increase profit per dollars invested as measured by ROI. In order to increase ROI, a customer-perspective objective might be to increase customer satisfaction as measured by the percentage of customers

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who would recommend the product to a friend. In order to increase customer satisfaction, an internal-process-perspective objective might be to increase product quality as measured by the percentage of defect-free units. Finally, in order to increase the percentage of defect-free units, the learning-and-growth-perspective objective might be to reduce factory employee turnover as measured by the percentage of employees leaving in under one year.

**Illustration 26.30** illustrates this linkage across perspectives.

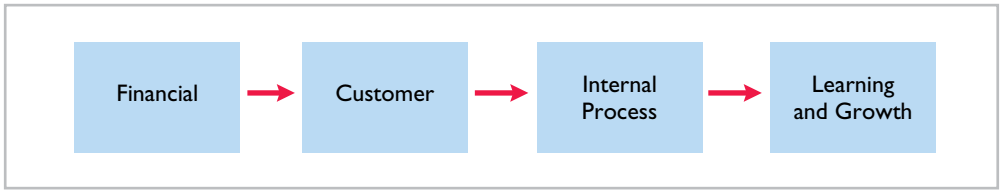


**ILLUSTRATION 26.30**
**Linked process across balanced scorecard perspectives**

Through this linked process, the company can better understand how to achieve its goals and what measures to use to evaluate performance.

In summary, the balanced scorecard does the following:

1. Employs both **financial and nonfinancial measures**. (For example, ROI is a financial measure; employee turnover is a nonfinancial measure.)
2. **Creates linkages** so that high-level corporate goals can be communicated all the way down to the shop floor.
3. **Provides measurable objectives for nonfinancial measures** such as product quality, rather than vague statements such as "We would like to improve quality."
4. Integrates all of the company's goals into a single performance measurement system, so that **an inappropriate amount of weight will not be placed on any single goal**.

## Service Company Insight United Airlines

PhotoDisc, Inc./Getty Images

### It May Be Time to Fly United Again

Many of the benefits of a balanced scorecard approach are evident in the improved operations at **United Airlines**. At the time it filed for bankruptcy, United had a reputation for some of the worst service in the airline business. But when Glenn Tilton took over as United's chief executive officer, he recognized that things had to change.

He implemented an incentive program that allows all of United's 63,000 employees to earn a bonus of 2.5% or more of their wages if the company "exceeds its goals for on-time flight departures and for customer intent to fly United again." After instituting this program, the company's on-time departures were among the best, its customer complaints were reduced considerably, and the number of customers who said that they would fly United again was at its highest level ever. However, after a recent, highly publicized incident where a traveler was injured as he was dragged off an overbooked flight United must once again overcome a negative public image.

**Sources:** Susan Carey, "Friendlier Skies: In Bankruptcy, United Airlines Forges a Path to Better Service," *Wall Street Journal* (June 15, 2004); and Emre Serpen, "More to Maintain," *Airline Business* (November 2012), pp. 38–40.

**Which of the perspectives of a balanced scorecard were the focus of United's CEO? (Go to WileyPLUS for this answer and additional questions.)**

## DO IT! 4 | Reporting Variances

Polar Vortex Corporation experienced the following variances: materials price $250 F, materials quantity $1,100 F, labor price $700 U, labor quantity $300 F, and overhead $800 F. Sales revenue was $102,700, and cost of goods sold (at standard) was $61,900. Determine the actual gross profit.

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**Solution**

| | | |
|---|---|---|
| Sales revenue | | $102,700 |
| Cost of goods sold (at standard) | | 61,900 |
| Standard gross profit | | 40,800 |
| Variances | | |
| Materials price | $ 250 F | |
| Materials quantity | 1,100 F | |
| Labor price | 700 U | |
| Labor quantity | 300 F | |
| Overhead | 800 F | |
| Total variance favorable | | 1,750 |
| Gross profit (actual) | | $ 42,550 |

**ACTION PLAN**

- Gross profit at standard is sales revenue less cost of goods sold at standard.
- Adjust standard gross profit by adding a net favorable variance or subtracting a net unfavorable variance.

Related exercise material: **DO IT! 26.4, E26.10, E26.14, and E26.15.**

# Appendix 26A Standard Cost Accounting System

**LEARNING OBJECTIVE *5**

Identify the features of a standard cost accounting system.

A **standard cost accounting system** is a double-entry system of accounting. In this system, companies use standard costs in making entries, and they formally recognize variances in the accounts. Companies may use a standard cost system with either job order or process costing.

In this appendix, we will explain and illustrate a **standard cost, job order cost accounting system**. The system is based on two important assumptions:

1. Variances from standards are recognized at the earliest opportunity.
2. The Work in Process account is maintained exclusively on the basis of standard costs.

In practice, there are many variations among standard cost systems. The system described here should prepare you for systems you see in the "real world."

## Journal Entries

We will use the transactions of Xonic to illustrate the journal entries. Note as you study the entries that the major difference between the entries here and those for the job order cost accounting system in Chapter 20 is the **variance accounts**.

1. Purchase raw materials on account for $13,020 when the standard cost is $12,600.

| | | |
|---|---|---|
| Raw Materials Inventory | 12,600 | |
| Materials Price Variance | 420 | |
| Accounts Payable | | 13,020 |
| (To record purchase of materials) | | |

Xonic debits the inventory account for actual quantities at standard cost. This enables the perpetual materials records to show actual quantities. Xonic debits the price variance, which is unfavorable, to Materials Price Variance.

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**2.** Incur direct labor costs of $31,080 when the standard labor cost is $31,500.

| | | |
|---|---|---|
| Factory Labor | 31,500 | |
| Labor Price Variance | | 420 |
| Factory Wages Payable | | 31,080 |
| (To record direct labor costs) | | |

Like the raw materials inventory account, Xonic debits Factory Labor for actual hours worked at the standard hourly rate of pay. In this case, the labor variance is favorable. Thus, Xonic credits Labor Price Variance.

**3.** Incur actual manufacturing overhead costs of $10,900.

| | | |
|---|---|---|
| Manufacturing Overhead | 10,900 | |
| Accounts Payable/Cash/Acc. Depreciation | | 10,900 |
| (To record overhead incurred) | | |

The controllable overhead variance (see Appendix 26B) is not recorded at this time. It depends on standard hours applied to work in process. This amount is not known at the time overhead is incurred.

**4.** Issue raw materials for production at a cost of $12,600 when the standard cost is $12,000.

| | | |
|---|---|---|
| Work in Process Inventory | 12,000 | |
| Materials Quantity Variance | 600 | |
| Raw Materials Inventory | | 12,600 |
| (To record issuance of raw materials) | | |

Xonic debits Work in Process Inventory for standard materials quantities used at standard prices. It debits the variance account because the variance is unfavorable. The company credits Raw Materials Inventory for actual quantities at standard prices.

**5.** Assign factory labor to production at a cost of $31,500 when standard cost is $30,000.

| | | |
|---|---|---|
| Work in Process Inventory | 30,000 | |
| Labor Quantity Variance | 1,500 | |
| Factory Labor | | 31,500 |
| (To assign factory labor to jobs) | | |

Xonic debits Work in Process Inventory for standard labor hours at standard rates. It debits the unfavorable variance to Labor Quantity Variance. The credit to Factory Labor produces a zero balance in this account.

**6.** Apply manufacturing overhead to production $10,000.

| | | |
|---|---|---|
| Work in Process Inventory | 10,000 | |
| Manufacturing Overhead | | 10,000 |
| (To assign overhead to jobs) | | |

Xonic debits Work in Process Inventory for standard hours allowed multiplied by the standard overhead rate.

**7.** Transfer completed work to finished goods $52,000.

| | | |
|---|---|---|
| Finished Goods Inventory | 52,000 | |
| Work in Process Inventory | | 52,000 |
| (To record transfer of completed work to finished goods) | | |

In this example, both inventory accounts are at standard cost.

**8.** Sell the 1,000 gallons of Xonic Tonic for $70,000.

| | | |
|---|---|---|
| Accounts Receivable | 70,000 | |
| Cost of Goods Sold | 52,000 | |
| Sales | | 70,000 |
| Finished Goods Inventory | | 52,000 |
| (To record sale of finished goods and the cost of goods sold) | | |

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The company debits Cost of Goods Sold at standard cost. Gross profit, in turn, is the difference between sales and the standard cost of goods sold.

**9.** Recognize unfavorable total overhead variance:

| | | |
|---|---|---|
| Overhead Variance | 900 | |
| Manufacturing Overhead | | 900 |
| (To recognize overhead variances) | | |

Prior to this entry, a debit balance of $900 existed in Manufacturing Overhead because overhead of $10,900 was incurred but only $10,000 of overhead was applied. This entry therefore adjusts the account to a zero balance in the Manufacturing Overhead account. The information needed for this entry is often not available until the end of the accounting period.

**HELPFUL HINT**

**Each debit balance in variance accounts indicates an unfavorable variance; each credit balance indicates a favorable variance.**

## Ledger Accounts

**Illustration 26A.1** shows the cost accounts for Xonic after posting the entries. Note that five variance accounts, highlighted in red, are included in the ledger (see **Helpful Hint**). The six other accounts are the same as those illustrated for a job order cost system in Chapter 20, in which only actual costs were used.

**ILLUSTRATION 26A.1**

**Cost accounts with variances**

**Raw Materials Inventory**

| | | | |
|---|---|---|---|
| (1) | 12,600 | (4) | 12,600 |

**Materials Price Variance**

| | | | |
|---|---|---|---|
| (1) | 420 | | |

**Work in Process Inventory**

| | | | |
|---|---|---|---|
| (4) | 12,000 | (7) | 52,000 |
| (5) | 30,000 | | |
| (6) | 10,000 | | |

**Factory Labor**

| | | | |
|---|---|---|---|
| (2) | 31,500 | (5) | 31,500 |

**Materials Quantity Variance**

| | | | |
|---|---|---|---|
| (4) | 600 | | |

**Finished Goods Inventory**

| | | | |
|---|---|---|---|
| (7) | 52,000 | (8) | 52,000 |

**Manufacturing Overhead**

| | | | |
|---|---|---|---|
| (3) | 10,900 | (6) | 10,000 |
| | | (9) | 900 |

**Labor Price Variance**

| | | | |
|---|---|---|---|
| | | (2) | 420 |

**Cost of Goods Sold**

| | | | |
|---|---|---|---|
| (8) | 52,000 | | |

**Labor Quantity Variance**

| | | | |
|---|---|---|---|
| (5) | 1,500 | | |

**Overhead Variance**

| | | | |
|---|---|---|---|
| (9) | 900 | | |

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# Appendix 26B Overhead Controllable and Volume Variances

**LEARNING OBJECTIVE *6**

Compute overhead controllable and volume variances.

As indicated in the chapter, the total overhead variance is generally analyzed through a price variance and a quantity variance. The name usually given to the price variance is the **overhead controllable variance**; the quantity variance is referred to as the **overhead volume variance**.

## Overhead Controllable Variance

The **overhead controllable variance** shows whether overhead costs are effectively controlled. To compute this variance, the company compares actual overhead costs incurred with budgeted costs for the **standard hours allowed**. The budgeted costs are determined from a flexible manufacturing overhead budget. The concepts related to a flexible budget were discussed in Chapter 25.

For Xonic, the budget formula for manufacturing overhead is variable manufacturing overhead cost of $3 per hour of labor plus fixed manufacturing overhead costs of $4,400 ($52,800 ÷ 12, per Illustration 26.6). **Illustration 26B.1** shows the monthly flexible budget for Xonic.

**ILLUSTRATION 26B.1**
**Flexible budget using standard direct labor hours**

Xonic

Home | Insert | Page Layout | Formulas | Data | Review | View

P18 fx

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | Xonic | | | | |
| 2 | Flexible Manufacturing Overhead Monthly Budget | | | | |
| 3 | Activity Index | | | | |
| 4 | Standard direct labor hours | 1,800 | 2,000 | 2,200 | 2,400 |
| 5 | | | | | |
| 6 | Costs | | | | |
| 7 | Variable costs | | | | |
| 8 | Indirect materials | $1,800 | $ 2,000 | $ 2,200 | $ 2,400 |
| 9 | Indirect labor | 2,700 | 3,000 | 3,300 | 3,600 |
| 10 | Utilities | 900 | 1,000 | 1,100 | 1,200 |
| 11 | Total variable costs | 5,400 | 6,000 | 6,600 | 7,200 |
| 12 | | | | | |
| 13 | Fixed costs | | | | |
| 14 | Supervision | 3,000 | 3,000 | 3,000 | 3,000 |
| 15 | Depreciation | 1,400 | 1,400 | 1,400 | 1,400 |
| 16 | Total fixed costs | 4,400 | 4,400 | 4,400 | 4,400 |
| 17 | Total costs | $9,800 | $10,400 | $11,000 | $11,600 |

As shown, the budgeted costs for 2,000 standard hours are $10,400 ($6,000 variable and $4,400 fixed).

**Illustration 26B.2** shows the formula for the overhead controllable variance and the calculation for Xonic at 1,000 units of output (2,000 standard labor hours).

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**ILLUSTRATION 26B.2**
**Formula for overhead controllable variance**

| Actual Overhead | – | Overhead Budgeted* | = | Overhead Controllable Variance |
|---|---|---|---|---|
| $10,900 ($6,500 + $4,400) | – | $10,400 ($6,000 + $4,400) | = | $500 U |

*Based on standard hours allowed.

The overhead controllable variance for Xonic is $500 unfavorable.

Most controllable variances are associated with variable costs, which are controllable costs. Fixed costs are often known at the time the budget is prepared and are therefore not as likely to deviate from the budgeted amount. In Xonic's case, all of the overhead controllable variance is due to the difference between the actual variable overhead costs ($6,500) and the budgeted variable costs ($6,000).

Management can compare actual and budgeted overhead for each manufacturing overhead cost that contributes to the controllable variance. In addition, management can develop cost and quantity variances for each overhead cost, such as indirect materials and indirect labor.

## Overhead Volume Variance

The **overhead volume variance** is the difference between normal capacity hours and standard hours allowed times the fixed overhead rate. The overhead volume variance relates to whether fixed costs were under- or overapplied during the year. For example, the overhead volume variance answers the question of whether Xonic effectively used its fixed costs. If Xonic produces less Xonic Tonic than normal capacity would allow, an unfavorable variance results. Conversely, if Xonic produces more Xonic Tonic than what is considered normal capacity, a favorable variance results.

**Illustration 26B.3** provides the formula for computing the overhead volume variance.

**ILLUSTRATION 26B.3**
**Formula for overhead volume variance**

$$\text{Fixed Overhead Rate} \times (\text{Normal Capacity Hours} - \text{Standard Hours Allowed}) = \text{Overhead Volume Variance}$$

To illustrate the fixed overhead rate computation, recall that Xonic budgeted fixed overhead cost for the year of $52,800 (Illustration 26.6). At normal capacity, 26,400 standard direct labor hours are required. The fixed overhead rate is therefore $2 per hour ($52,800 ÷ 26,400 hours).

Xonic produced 1,000 units of Xonic Tonic in June. The standard hours allowed for the 1,000 gallons produced in June is 2,000 (1,000 gallons × 2 hours). For Xonic, normal capacity for June is 1,100, so standard direct labor hours for June at normal capacity is 2,200 (26,400 annual hours ÷ 12 months). The computation of the overhead volume variance in this case is as shown in **Illustration 26B.4**.

**ILLUSTRATION 26B.4**
**Computation of overhead volume variance for Xonic**

| Fixed Overhead Rate | × | Normal Capacity Hours | – | Standard Hours Allowed | = | Overhead Volume Variance |
|---|---|---|---|---|---|---|
| $2 | × | (2,200 | – | 2,000) | = | $400 U |

In Xonic's case, a $400 unfavorable volume variance results. The volume variance is unfavorable because Xonic produced only 1,000 gallons rather than the normal capacity of 1,100 gallons in the month of June. As a result, it underapplied fixed overhead for that period.

In computing the overhead variances, it is important to remember the following.

1. Standard hours allowed are used in each of the variances.
2. Budgeted costs for the controllable variance are derived from the flexible budget.
3. The controllable variance generally pertains to variable costs.
4. The volume variance pertains solely to fixed costs.

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# Review and Practice

## Learning Objectives Review

### 1 Describe standard costs.

Both standards and budgets are predetermined costs. The primary difference is that a standard is a unit amount, whereas a budget is a total amount. A standard may be regarded as the budgeted cost per unit of product.

Standard costs offer a number of advantages. They (a) facilitate management planning, (b) promote greater economy, (c) are useful in setting selling prices, (d) contribute to management control, (e) permit "management by exception," and (f) simplify the costing of inventories and reduce clerical costs.

The direct materials price standard should be based on the delivered cost of raw materials plus an allowance for receiving and handling. The direct materials quantity standard should establish the required quantity plus an allowance for waste and spoilage.

The direct labor price standard should be based on current wage rates and anticipated adjustments such as COLAs. It also generally includes payroll taxes and fringe benefits. Direct labor quantity standards should be based on required production time plus an allowance for rest periods, cleanup, machine setup, and machine downtime.

For manufacturing overhead, a standard predetermined overhead rate is used. It is based on an expected standard activity index such as standard direct labor hours or standard machine hours.

### 2 Determine direct materials variances.

The formulas for the direct materials variances are as follows.

$$\begin{pmatrix}\text{Actual quantity}\\ \times\ \text{Actual price}\end{pmatrix} - \begin{pmatrix}\text{Standard quantity}\\ \times\ \text{Standard price}\end{pmatrix} = \begin{matrix}\text{Total}\\ \text{materials}\\ \text{variance}\end{matrix}$$

$$\begin{pmatrix}\text{Actual quantity}\\ \times\ \text{Actual price}\end{pmatrix} - \begin{pmatrix}\text{Actual quantity}\\ \times\ \text{Standard price}\end{pmatrix} = \begin{matrix}\text{Materials}\\ \text{price}\\ \text{variance}\end{matrix}$$

$$\begin{pmatrix}\text{Actual quantity}\\ \times\ \text{Standard price}\end{pmatrix} - \begin{pmatrix}\text{Standard quantity}\\ \times\ \text{Standard price}\end{pmatrix} = \begin{matrix}\text{Materials}\\ \text{quantity}\\ \text{variance}\end{matrix}$$

### 3 Determine direct labor and total manufacturing overhead variances.

The formulas for the direct labor variances are as follows.

$$\begin{pmatrix}\text{Actual hours}\\ \times\ \text{Actual rate}\end{pmatrix} - \begin{pmatrix}\text{Standard hours}\\ \times\ \text{Standard rate}\end{pmatrix} = \begin{matrix}\text{Total}\\ \text{labor}\\ \text{variance}\end{matrix}$$

$$\begin{pmatrix}\text{Actual hours}\\ \times\ \text{Actual rate}\end{pmatrix} - \begin{pmatrix}\text{Actual hours}\\ \times\ \text{Standard rate}\end{pmatrix} = \begin{matrix}\text{Labor}\\ \text{price}\\ \text{variance}\end{matrix}$$

$$\begin{pmatrix}\text{Actual hours}\\ \times\ \text{Standard rate}\end{pmatrix} - \begin{pmatrix}\text{Standard hours}\\ \times\ \text{Standard rate}\end{pmatrix} = \begin{matrix}\text{Labor}\\ \text{quantity}\\ \text{variance}\end{matrix}$$

The formula for the total manufacturing overhead variance is as follows.

$$\begin{pmatrix}\text{Actual}\\ \text{overhead}\end{pmatrix} - \begin{pmatrix}\text{Overhead}\\ \text{applied at}\\ \text{standard hours}\\ \text{allowed}\end{pmatrix} = \begin{matrix}\text{Total overhead}\\ \text{variance}\end{matrix}$$

### 4 Prepare variance reports and balanced scorecards.

Variances are reported to management in variance reports. The reports facilitate management by exception by highlighting significant differences. Under a standard costing system, an income statement prepared for management will report cost of goods sold at standard cost and then disclose each variance separately.

The balanced scorecard incorporates financial and nonfinancial measures in an integrated system that links performance measurement and a company's strategic goals. It employs four perspectives: financial, customer, internal process, and learning and growth. Objectives are set within each of these perspectives that link to objectives within the other perspectives.

### *5 Identify the features of a standard cost accounting system.

In a standard cost accounting system, companies journalize and post standard costs, and they maintain separate variance accounts in the ledger.

### *6 Compute overhead controllable and volume variances.

The total overhead variance is generally analyzed through a price variance and a quantity variance. The name usually given to the price variance is the overhead controllable variance. The quantity variance is referred to as the overhead volume variance.

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## Glossary Review

**Balanced scorecard** An approach that incorporates financial and nonfinancial measures in an integrated system that links performance measurement and a company's strategic goals. (p. 26-18).

**Customer perspective** A viewpoint employed in the balanced scorecard to evaluate the company from the perspective of those people who buy and use its products or services. (p. 26-18).

**Direct labor price standard** The rate per hour that management determines should be incurred for direct labor to produce one unit of product. (p. 26-5).

**Direct labor quantity standard** The time that management determines should be required to produce one unit of product. (p. 26-6).

**Direct materials price standard** The cost per unit of direct materials that management determines should be incurred to produce one unit of product. (p. 26-5).

**Direct materials quantity standard** The quantity of direct materials that management determines should be used per unit of finished goods. (p. 26-5).

**Financial perspective** A viewpoint employed in the balanced scorecard to evaluate a company's performance using financial measures. (p. 26-18).

**Ideal standards** Standards based on the optimum level of performance under perfect operating conditions. (p. 26-4).

**Internal process perspective** A viewpoint employed in the balanced scorecard to evaluate the effectiveness and efficiency of a company's value chain, including product development, production, delivery, and after-sale service. (p. 26-18).

**Labor price variance** The difference between the actual hours times the actual rate and the actual hours times the standard rate for labor. (p. 26-12).

**Labor quantity variance** The difference between actual hours times the standard rate and standard hours times the standard rate for labor. (p. 26-12).

**Learning and growth perspective** A viewpoint employed in the balanced scorecard to evaluate how well a company develops and retains its employees. (p. 26-18).

**Materials price variance** The difference between the actual quantity times the actual price and the actual quantity times the standard price for materials. (p. 26-9).

**Materials quantity variance** The difference between the actual quantity times the standard price and the standard quantity times the standard price for materials. (p. 26-10).

**Normal capacity** The average activity output that a company should experience over the long run. (p. 26-6).

**Normal standards** Standards based on an efficient level of performance that are attainable under expected operating conditions. (p. 26-4).

***Overhead controllable variance** The difference between actual overhead incurred and overhead budgeted for the standard hours allowed. (p. 26-23).

***Overhead volume variance** The difference between normal capacity hours and standard hours allowed times the fixed overhead rate. (p. 26-24).

***Standard cost accounting system** A double-entry system of accounting in which standard costs are used in making entries, and variances are recognized in the accounts. (p. 26-20).

**Standard costs** Predetermined unit costs which companies use as measures of performance. (p. 26-3).

**Standard hours allowed** The hours that should have been worked for the units produced. (p. 26-14).

**Standard predetermined overhead rate** An overhead rate determined by dividing budgeted overhead costs by an expected standard activity index. (p. 26-6).

**Total labor variance** The difference between actual hours times the actual rate and standard hours times the standard rate for labor. (p. 26-12).

**Total materials variance** The difference between the actual quantity times the actual price and the standard quantity times the standard price of materials. (p. 26-9).

**Total overhead variance** The difference between actual overhead costs and overhead costs applied to work done, based on standard hours allowed. (p. 26-14).

**Variance** The difference between total actual costs and total standard costs. (p. 26-7).

## Practice Multiple-Choice Questions

1. **(LO 1)** Standards differ from budgets in that:
   - **a.** budgets but not standards may be used in valuing inventories.
   - **b.** budgets but not standards may be journalized and posted.
   - **c.** budgets are a total amount and standards are a unit amount.
   - **d.** only budgets contribute to management planning and control.

2. **(LO 1)** Standard costs:
   - **a.** are imposed by governmental agencies.
   - **b.** are predetermined unit costs which companies use as measures of performance.
   - **c.** can be used by manufacturing companies but not by service or not-for-profit companies.
   - **d.** All of the above.

3. **(LO 1)** The advantages of standard costs include all of the following **except**:
   - **a.** management by exception may be used.
   - **b.** management planning is facilitated.
   - **c.** they may simplify the costing of inventories.
   - **d.** management must use a static budget.

4. **(LO 1)** Normal standards:
   - **a.** allow for rest periods, machine breakdowns, and setup time.
   - **b.** represent levels of performance under perfect operating conditions.
   - **c.** are rarely used because managers believe they lower workforce morale.
   - **d.** are more likely than ideal standards to result in unethical practices.

5. **(LO 1)** The setting of standards is:
   - **a.** a managerial accounting decision.

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**b.** a management decision.

**c.** a worker decision.

**d.** preferably set at the ideal level of performance.

**6.** **(LO 2)** Each of the following formulas is correct **except**:

**a.** Labor price variance = (Actual hours × Actual rate) − (Actual hours × Standard rate).

**b.** Total overhead variance = Actual overhead − Overhead applied.

**c.** Materials price variance = (Actual quantity × Actual price) − (Standard quantity × Standard price).

**d.** Labor quantity variance = (Actual hours × Standard rate) − (Standard hours × Standard rate).

**7.** **(LO 2)** In producing product AA, 6,300 pounds of direct materials were used at a cost of $1.10 per pound. The standard was 6,000 pounds at $1.00 per pound. The direct materials quantity variance is:

**a.** $330 unfavorable.

**b.** $300 unfavorable.

**c.** $600 unfavorable.

**d.** $630 unfavorable.

**8.** **(LO 3)** In producing product ZZ, 14,800 direct labor hours were used at a rate of $8.20 per hour. The standard was 15,000 hours at $8.00 per hour. Based on these data, the direct labor:

**a.** quantity variance is $1,600 favorable.

**b.** quantity variance is $1,600 unfavorable.

**c.** price variance is $3,000 favorable.

**d.** price variance is $3,000 unfavorable.

**9.** **(LO 3)** Which of the following is **correct** about the total overhead variance?

**a.** Budgeted overhead and overhead applied are the same.

**b.** Total actual overhead is composed of variable overhead, fixed overhead, and period costs.

**c.** Standard hours actually worked are used in computing the variance.

**d.** Standard hours allowed for the work done is the measure used in computing the variance.

**10.** **(LO 3)** The formula for computing the total overhead variance is:

**a.** actual overhead less overhead applied.

**b.** overhead budgeted less overhead applied.

**c.** actual overhead less overhead budgeted.

**d.** No correct answer is given.

**11.** **(LO 4)** Which of the following is **incorrect** about variance reports?

**a.** They facilitate "management by exception."

**b.** They should only be sent to the top level of management.

**c.** They should be prepared as soon as possible.

**d.** They may vary in form, content, and frequency among companies.

**12.** **(LO 4)** In using variance reports to evaluate cost control, management normally looks into:

**a.** all variances.

**b.** favorable variances only.

**c.** unfavorable variances only.

**d.** both favorable and unfavorable variances that exceed a predetermined quantitative measure such as a percentage or dollar amount.

**13.** **(LO 4)** Generally accepted accounting principles allow a company to:

**a.** report inventory at standard cost but cost of goods sold must be reported at actual cost.

**b.** report cost of goods sold at standard cost but inventory must be reported at actual cost.

**c.** report inventory and cost of goods sold at standard cost as long as there are no significant differences between actual and standard cost.

**d.** report inventory and cost of goods sold only at actual costs; standard costing is never permitted.

**14.** **(LO 4)** Which of the following would **not** be an objective used in the customer perspective of the balanced scorecard approach?

**a.** Percentage of customers who would recommend product to a friend.

**b.** Customer retention.

**c.** Brand recognition.

**d.** Earnings per share.

***15.** **(LO 5)** Which of the following is **incorrect** about a standard cost accounting system?

**a.** It is applicable to job order costing.

**b.** It is applicable to process costing.

**c.** It reports only favorable variances.

**d.** It keeps separate accounts for each variance.

***16.** **(LO 6)** The formula to compute the overhead volume variance is:

**a.** Fixed overhead rate × (Standard hours − Actual hours).

**b.** Fixed overhead rate × (Normal capacity hours − Actual hours).

**c.** Fixed overhead rate × (Normal capacity hours − Standard hours allowed).

**d.** (Variable overhead rate + Fixed overhead rate) × (Normal capacity hours − Standard hours allowed).

## Solutions

**1.** **c.** Budgets are expressed in total amounts, and standards are expressed in unit amounts. The other choices are incorrect because (a) standards, not budgets, may be used in valuing inventories; (b) standards, not budgets, may be journalized and posted; and (d) both budgets and standards contribute to management planning and control.

**2.** **b.** Standard costs are predetermined units costs which companies use as measures of performance. The other choices are incorrect because (a) only those that are called regulations are imposed by governmental agencies, (c) standard costs can be used by all types of companies, and (d) choices (a) and (c) are incorrect.

**3.** **d.** Standard costs are separate from a static budget. The other choices are all advantages of using standard costs.

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**4. a.** Normal standards allow for rest periods, machine breakdowns, and setup time. The other choices are incorrect because they describe ideal standards, not normal standards.

**5. b.** Standards are set by management. The other choices are incorrect because setting standards requires input from (a) managerial accountants and (c) sometimes workers, but the final decision is made by management. Choice (d) is incorrect because setting standards at the ideal level of performance is uncommon because of the perceived negative effect on worker morale.

**6. c.** Materials price variance = (Actual quantity × Actual price) − (Actual quantity (not Standard quantity) × Standard price). The other choices are correct formulas.

**7. b.** The direct materials quantity variance is (6,300 × $1.00) − (6,000 × $1.00) = $300. This variance is unfavorable because more material was used than prescribed by the standard. The other choices are therefore incorrect.

**8. a.** The direct labor quantity variance is (14,800 × $8) − (15,000 × $8) = $1,600. This variance is favorable because fewer labor hours were used than prescribed by the standard. The other choices are therefore incorrect.

**9. d.** Standard hours allowed for work done is the measure used in computing the variance. The other choices are incorrect because (a) budgeted overhead is used to calculate the predetermined overhead rate while overhead applied is equal to standard hours allowed times the predetermined overhead rate, (b) overhead is a product cost and does not include period costs, and (c) standard hours allowed, not hours actually worked, are used in computing the overhead variance.

**10. a.** Total overhead variance equals actual overhead less overhead applied. The other choices are therefore incorrect.

**11. b.** Variance reports should be sent to the level of management responsible for the area in which the variance occurred so it can be remedied as quickly as possible. The other choices are correct statements.

**12. d.** In using variance reports to evaluate cost control, management normally looks into both favorable and unfavorable variances that exceed a predetermined quantitative measure such as percentage or dollar amount. The other choices are therefore incorrect.

**13. c.** GAAP allows a company to report both inventory and cost of goods sold at standard cost as long as there are no significant differences between actual and standard cost. The other choices are therefore incorrect.

**14. d.** Earnings per share is not an objective used in the customer perspective of the balanced scorecard approach. The other choices are all true statements.

***15. c.** A standard cost accounting system reports both favorable and unfavorable variances. The other choices are all correct statements.

***16. c.** The formula to compute the overhead volume variance is Fixed overhead rate × (Normal capacity hours − Standard hours allowed). The other choices are therefore incorrect.

## Practice Brief Exercises

*Set direct materials standard.*

**1. (LO 1)** Castellen Company accumulates the following data concerning raw materials in making one quart of finished product. (1) Price—purchase price $3.00; terms 2/10, n/30; freight-in $0.25; and receiving and handling $0.10. (2) Quantity—required materials 2.7 pounds, allowance for waste and spoilage 0.3 pounds. Compute the following.

**a.** Standard direct materials price per quart.

**b.** Standard direct materials quantity per quart.

**c.** Total standard materials cost per quart

### Solution

**1. a.** Standard direct materials price per quart = ($3.00 − $0.06 + $0.25 + $0.10) = $3.29

**b.** Standard direct materials quantity per quart = (2.7 + .3) = 3 pounds

**c.** Standard materials cost per quart = ($3.29 × 3) = $9.71

*Compute direct materials variances.*

**2. (LO 2)** Spandrell Company's standard materials cost per unit of output is $12 (3 pounds × $4). During July, the company purchases and uses 5,800 pounds of materials costing $22,910 in making 2,000 units of finished product. Compute the total, price, and quantity materials variances.

### Solution

**2.** Total materials variance = [(5,800 × $3.95*) − (6,000** × $4.00)] = $1,090 F

Materials price variance = [(5,800 × $3.95) − (5,800 × $4.00)] = $290 F

Materials quantity variance [(5,800 × $4.00) − (6,000 × $4.00)] = $800 F

*$22,910 ÷ 5,800; **2,000 × 3

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**3. (LO 3)** Timemore Company's standard labor cost per unit of output is $34 (2 hours × $17 per hour). During August, the company incurs 1,960 hours of direct labor at an hourly cost of $17.20 per hour in making 1,000 units of finished product. Compute the total, price, and quantity labor variances.

*Compute direct labor variances.*

### Solution

**3.** Total labor variance = [(1,960 × $17.20) – (2,000 × $17.00)] = $288 F

Labor price variance = [(1,960 × $17.20) – (1,960 × $17.00)] = $392 U

Labor quantity variance = [(1,960 × $17.00) – (2,000 × $17.00)] = $680 F

## Practice Exercises

**1. (LO 2, 3)** Hector Inc., which produces a single product, has prepared the following standard cost sheet for one unit of the product.

*Compute materials and labor variances.*

| | |
|---|---|
| Direct materials (6 pounds at $2.50 per pound) | $15.00 |
| Direct labor (3.1 hours at $12.00 per hour) | $37.20 |

During the month of April, the company manufactures 250 units and incurs the following actual costs.

| | |
|---|---|
| Direct materials purchased and used (1,600 pounds) | $4,192 |
| Direct labor (760 hours) | $8,740 |

### Instructions

Compute the total, price, and quantity variances for materials and labor.

### Solution

**1.** Total materials variance:

| (AQ × AP) | – | (SQ × SP) | | |
|---|---|---|---|---|
| (1,600 × $2.62*) | | (1,500** × $2.50) | | |
| $4,192 | – | $3,750 | = | $442 U |

*$4,192 ÷ 1,600 **250 × 6

Materials price variance:

| (AQ × AP) | – | (AQ × SP) | | |
|---|---|---|---|---|
| (1,600 × $2.62) | | (1,600 × $2.50) | | |
| $4,192 | – | $4,000 | = | $192 U |

Materials quantity variance:

| (AQ × SP) | – | (SQ × SP) | | |
|---|---|---|---|---|
| (1,600 × $2.50) | | (1,500 × $2.50) | | |
| $4,000 | – | $3,750 | = | $250 U |

Total labor variance:

| (AH × AR) | – | (SH × SR) | | |
|---|---|---|---|---|
| (760 × $11.50*) | | (775** × $12.00) | | |
| $8,740 | – | $9,300 | = | $560 F |

*$8,740 ÷ 760 **250 × 3.1

Labor price variance:

| (AH × AR) | – | (AH × SR) | | |
|---|---|---|---|---|
| (760 × $11.50) | | (760 × $12.00) | | |
| $8,740 | – | $9,120 | = | $380 F |

Labor quantity variance:

| (AH × SR) | – | (SH × SR) | | |
|---|---|---|---|---|
| (760 × $12.00) | | (775 × $12.00) | | |
| $9,120 | – | $9,300 | = | $180 F |

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*Compute overhead variances.*

**2. (LO 3)** Manufacturing overhead data for the production of Product H by Yamato Company are as follows.

| | |
|---|---|
| Overhead incurred for 35,000 actual direct labor hours worked | $140,000 |
| Overhead rate (variable $3; fixed $1) at normal capacity of 36,000 direct labor hours | $4 |
| Standard hours allowed for work done | 34,000 |

**Instructions**

Compute the total overhead variance.

**Solution**

2. Total overhead variance:

| Actual Overhead | – | Overhead Applied | = | |
|---|---|---|---|---|
| $140,000 | – | $136,000 (34,000 × $4) | = | $4,000 U |

## Practice Problem

*Compute variances.*

**(LO 2, 3)** Manlow Company makes a cologne called Allure. The standard cost for one bottle of Allure is as follows.

| | Standard | | | | | |
|---|---|---|---|---|---|---|
| **Manufacturing Cost Elements** | **Quantity** | × | **Price** | = | **Cost** |
| Direct materials | 6 oz. | × | $ 0.90 | = | $ 5.40 |
| Direct labor | 0.5 hrs. | × | $12.00 | = | 6.00 |
| Manufacturing overhead | 0.5 hrs. | × | $ 4.80 | = | 2.40 |
| | | | | | $13.80 |

During the month, the following transactions occurred in manufacturing 10,000 bottles of Allure.

1. 58,000 ounces of materials were purchased at $1.00 per ounce.
2. All the materials purchased were used to produce the 10,000 bottles of Allure.
3. 4,900 direct labor hours were worked at a total labor cost of $56,350.
4. Variable manufacturing overhead incurred was $15,000 and fixed overhead incurred was $10,400.

The manufacturing overhead rate of $4.80 is based on a normal capacity of 5,200 direct labor hours. The total budget at this capacity is $10,400 fixed and $14,560 variable.

**Instructions**

**a.** Compute the total variance and the variances for direct materials and direct labor elements.

**b.** Compute the total variance for manufacturing overhead.

**Solution**

**a.**

**Total Variance**

| | |
|---|---|
| Actual costs incurred | |
| Direct materials | $ 58,000 |
| Direct labor | 56,350 |
| Manufacturing overhead | 25,400 |
| | 139,750 |
| Standard cost (10,000 × $13.80) | 138,000 |
| Total variance | $ 1,750 U |

**Direct Materials Variances**

| | | | | | | |
|---|---|---|---|---|---|---|
| Total | = | $58,000 (58,000 × $1.00) | – | $54,000 (60,000* × $0.90) | = | $4,000 U |
| Price | = | $58,000 (58,000 × $1.00) | – | $52,200 (58,000 × $0.90) | = | $5,800 U |
| Quantity | = | $52,200 (58,000 × $0.90) | – | $54,000 (60,000 × $0.90) | = | $1,800 F |

*10,000 × 6

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**Direct Labor Variances**

| | | | | | | |
|---|---|---|---|---|---|---|
| Total | = | $56,350 (4,900 × $11.50*) | – | $60,000 (5,000** × $12.00) | = | $3,650 F |
| Price | = | $56,350 (4,900 × $11.50) | – | $58,800 (4,900 × $12.00) | = | $2,450 F |
| Quantity | = | $58,800 (4,900 × $12.00) | – | $60,000 (5,000 × $12.00) | = | $1,200 F |

*56,350 ÷ 4,900; **10,000 × 0.5

**b.** **Overhead Variance**

| | | | | | | |
|---|---|---|---|---|---|---|
| Total | = | $25,400 ($15,000 + $10,400) | – | $24,000 (5,000 × $4.80) | = | $1,400 U |

## WileyPLUS

Brief Exercises, DO IT! Exercises, Exercises, Problems, and many additional resources are available for practice in WileyPLUS.

*Note:* All asterisked Questions, Exercises, and Problems relate to material in the appendices to the chapter.

## Questions

**1.** **a.** "Standard costs are the expected total cost of completing a job." Is this correct? Explain.

**b.** "A standard imposed by a governmental agency is known as a regulation." Do you agree? Explain.

**2.** **a.** Explain the similarities and differences between standards and budgets.

**b.** Contrast the accounting for standards and budgets.

**3.** Standard costs facilitate management planning. What are the other advantages of standard costs?

**4.** Contrast the roles of the management accountant and management in setting standard costs.

**5.** Distinguish between an ideal standard and a normal standard.

**6.** What factors should be considered in setting (a) the direct materials price standard and (b) the direct materials quantity standard?

**7.** "The objective in setting the direct labor quantity standard is to determine the aggregate time required to make one unit of product." Do you agree? What allowances should be made in setting this standard?

**8.** How is the predetermined overhead rate determined when standard costs are used?

**9.** What is the difference between a favorable cost variance and an unfavorable cost variance?

**10.** In each of the following formulas, supply the words that should be inserted for each number in parentheses.

**a.** (Actual quantity × (1)) – (Standard quantity × (2)) = Total materials variance

**b.** ((3) × Actual price) – (Actual quantity × (4)) = Materials price variance

**c.** (Actual quantity × (5)) – ((6) × Standard price) = Materials quantity variance

**11.** In the direct labor variance matrix, there are three factors: (1) Actual hours × Actual rate, (2) Actual hours × Standard rate, and (3) Standard hours × Standard rate. Using the numbers, indicate the formulas for each of the direct labor variances.

**12.** Mikan Company's standard predetermined overhead rate is $9 per direct labor hour. For the month of June, 26,000 actual hours were worked, and 27,000 standard hours were allowed. How much overhead was applied?

**13.** How often should variances be reported to management? What principle may be used with variance reports?

**14.** What circumstances may cause the purchasing department to be responsible for both an unfavorable materials price variance and an unfavorable materials quantity variance?

**15.** What are the four perspectives used in the balanced scorecard? Discuss the nature of each, and how the perspectives are linked.

**16.** Kerry James says that the balanced scorecard was created to replace financial measures as the primary mechanism for performance evaluation. He says that it uses only nonfinancial measures. Is this true?

**17.** What are some examples of nonfinancial measures used by companies to evaluate performance?

**18.** (a) How are variances reported in income statements prepared for management? (b) May standard costs be used in preparing financial statements for stockholders? Explain.

***19.** (a) Explain the basic features of a standard cost accounting system. (b) What type of balance will exist in the variance account when (1) the materials price variance is unfavorable and (2) the labor quantity variance is favorable?

***20.** If the $9 per hour overhead rate in Question 12 includes $5 variable, and actual overhead costs were $248,000, what is the overhead controllable variance for June? The normal capacity hours were 28,000. Is the variance favorable or unfavorable?

***21.** What is the purpose of computing the overhead volume variance? What is the basic formula for this variance?

***22.** Alma Ortiz does not understand why the overhead volume variance indicates that fixed overhead costs are under or overapplied. Clarify this matter for Alma.

***23.** John Hsu is attempting to outline the important points about overhead variances on a class examination. List four points that John should include in his outline.

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## Brief Exercises

*Distinguish between a standard and a budget.*

**BE26.1 (LO 1)** Lopez Company uses both standards and budgets. For the year, estimated production of Product X is 500,000 units. Total estimated cost for materials and labor are $1,400,000 and $1,700,000. Compute the estimates for (a) a standard cost and (b) a budgeted cost.

*Set direct materials standard.*

**BE26.2 (LO 1)** Tang Company accumulates the following data concerning raw materials in making one gallon of finished product. (1) Price—net purchase price $2.30, freight-in $0.20, and receiving and handling $0.10. (2) Quantity—required materials 3.6 pounds, allowance for waste and spoilage 0.4 pounds. Compute the following.

**a.** Standard direct materials price per gallon.

**b.** Standard direct materials quantity per gallon.

**c.** Total standard materials cost per gallon.

*Set direct labor standard.*

**BE26.3 (LO 1)** Labor data for making one gallon of finished product in Bing Company are as follows. (1) Price—hourly wage rate $14.00, payroll taxes $0.80, and fringe benefits $1.20. (2) Quantity—actual production time 1.1 hours, rest periods and cleanup 0.25 hours, and setup and downtime 0.15 hours. Compute the following.

**a.** Standard direct labor rate per hour.

**b.** Standard direct labor hours per gallon.

**c.** Standard labor cost per gallon.

*Compute direct materials variances.*

**BE26.4 (LO 2)** Simba Company's standard materials cost per unit of output is $10 (2 pounds × $5). During July, the company purchases and uses 3,200 pounds of materials costing $16,192 in making 1,500 units of finished product. Compute the total, price, and quantity materials variances.

*Compute direct labor variances.*

**BE26.5 (LO 3)** Mordica Company's standard labor cost per unit of output is $22 (2 hours × $11 per hour). During August, the company incurs 2,150 hours of direct labor at an hourly cost of $10.80 per hour in making 1,000 units of finished product. Compute the total, price, and quantity labor variances.

*Compute total overhead variance.*

**BE26.6 (LO 3)** In October, Pine Company reports 21,000 actual direct labor hours, and it incurs $118,000 of manufacturing overhead costs. Standard hours allowed for the work done is 20,600 hours. The predetermined overhead rate is $6 per direct labor hour. Compute the total overhead variance.

*Match balanced scorecard perspectives.*

**BE26.7 (LO 4)** The four perspectives in the balanced scorecard are (1) financial, (2) customer, (3) internal process, and (4) learning and growth. Match each of the following objectives with the perspective it is most likely associated with: (a) plant capacity utilization, (b) employee work days missed due to injury, (c) return on assets, and (d) brand recognition.

*Journalize materials variances.*

***BE26.8 (LO 5)** Journalize the following transactions for Combs Company.

**a.** Purchased 6,000 units of raw materials on account for $11,500. The standard cost was $12,000.

**b.** Issued 5,600 units of raw materials for production. The standard units were 5,800.

*Journalize labor variances.*

***BE26.9 (LO 5)** Journalize the following transactions for Shelton, Inc.

**a.** Incurred direct labor costs of $24,000 for 3,000 hours. The standard labor cost was $24,900.

**b.** Assigned 3,000 direct labor hours costing $24,000 to production. Standard hours were 3,150.

*Compute the overhead controllable variance.*

***BE26.10 (LO 6)** Some overhead data for Pine Company are given in BE26.6. In addition, the flexible manufacturing overhead budget shows that budgeted costs are $4 variable per direct labor hour and $50,000 fixed. Compute the overhead controllable variance.

*Compute overhead volume variance.*

***BE26.11 (LO 6)** Using the data in BE26.6 and BE26.10, compute the overhead volume variance. Normal capacity was 25,000 direct labor hours.

## DO IT! Exercises

*Compute standard cost.*

**DO IT! 26.1 (LO 1)** Larkin Company accumulated the following standard cost data concerning product I-Tal.

Direct materials per unit: 2 pounds at $5 per pound
Direct labor per unit: 0.2 hours at $16 per hour

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Manufacturing overhead: Allocated based on direct labor hours at a predetermined rate of $20 per direct labor hour

Compute the standard cost of one unit of product I-Tal.

**DO IT! 26.2 (LO 2)** The standard cost of product 777 includes 2 units of direct materials at $6.00 per unit. During August, the company bought 29,000 units of materials at $6.30 and used those materials to produce 16,000 units. Compute the total, price, and quantity variances for materials.

*Compute materials variance.*

**DO IT! 26.3 (LO 3)** The standard cost of product 5252 includes 1.9 hours of direct labor at $14.00 per hour. The predetermined overhead rate is $22.00 per direct labor hour. During July, the company incurred 4,000 hours of direct labor at an average rate of $14.30 per hour and $81,300 of manufacturing overhead costs. It produced 2,000 units.

*Compute labor and manufacturing overhead variances.*

**a.** Compute the total, price, and quantity variances for labor.

**b.** Compute the total overhead variance.

**DO IT! 26.4 (LO 4)** Tropic Zone Corporation experienced the following variances: materials price $350 U, materials quantity $1,700 F, labor price $800 F, labor quantity $500 F, and total overhead $1,200 U. Sales revenue was $92,100, and cost of goods sold (at standard) was $51,600. Determine the actual gross profit.

*Prepare variance report.*

## Exercises

**E26.1 (LO 1)** **Writing** Parsons Company is planning to produce 2,000 units of product in 2020. Each unit requires 3 pounds of materials at $5 per pound and a half-hour of labor at $16 per hour. The overhead rate is 70% of direct labor.

*Compute budget and standard.*

### Instructions

**a.** Compute the budgeted amounts for 2020 for direct materials to be used, direct labor, and applied overhead.

**b.** Compute the standard cost of one unit of product.

**c.** What are the potential advantages to a corporation of using standard costs?

**E26.2 (LO 1)** Hank Itzek manufactures and sells homemade wine, and he wants to develop a standard cost per gallon. The following are required for production of a 50-gallon batch.

*Compute standard materials costs.*

3,000 ounces of grape concentrate at $0.06 per ounce
54 pounds of granulated sugar at $0.30 per pound
60 lemons at $0.60 each
50 yeast tablets at $0.25 each
50 nutrient tablets at $0.20 each
2,600 ounces of water at $0.005 per ounce

Hank estimates that 4% of the grape concentrate is wasted, 10% of the sugar is lost, and 25% of the lemons cannot be used.

### Instructions

Compute the standard cost of the ingredients for one gallon of wine. (Carry computations to two decimal places.)

**E26.3 (LO 1)** Stefani Company has gathered the following information about its product.

*Compute standard cost per unit.*

*Direct materials.* Each unit of product contains 4.5 pounds of materials. The average waste and spoilage per unit produced under normal conditions is 0.5 pounds. Materials cost $5 per pound, but Stefani always takes the 2% cash discount all of its suppliers offer. Freight costs average $0.25 per pound.

*Direct labor.* Each unit requires 2 hours of labor. Setup, cleanup, and downtime average 0.4 hours per unit. The average hourly pay rate of Stefani's employees is $12. Payroll taxes and fringe benefits are an additional $3 per hour.

*Manufacturing overhead.* Overhead is applied at a rate of $7 per direct labor hour.

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**Instructions**

Compute Stefani's total standard cost per unit.

*Compute labor cost and labor quantity variance.*

**E26.4 (LO 1, 3)** Service Monte Services, Inc. is trying to establish the standard labor cost of a typical brake repair. The following data have been collected from time and motion studies conducted over the past month.

| | |
|---|---|
| Actual time spent on the brake repair | 1.0 hour |
| Hourly wage rate | $12 |
| Payroll taxes | 10% of wage rate |
| Setup and downtime | 20% of actual labor time |
| Cleanup and rest periods | 30% of actual labor time |
| Fringe benefits | 25% of wage rate |

**Instructions**

**a.** Determine the standard direct labor hours per brake repair.

**b.** Determine the standard direct labor hourly rate.

**c.** Determine the standard direct labor cost per brake repair.

**d.** If a brake repair took 1.6 hours at the standard hourly rate, what was the direct labor quantity variance?

*Compute materials price and quantity variances.*

Excel

**E26.5 (LO 2)** The standard cost of Product B manufactured by Pharrell Company includes three units of direct materials at $5.00 per unit. During June, 29,000 units of direct materials are purchased at a cost of $4.70 per unit, and 29,000 units of direct materials are used to produce 9,400 units of Product B.

**Instructions**

**a.** Compute the total materials variance and the price and quantity variances.

**b.** Repeat (a), assuming the purchase price is $5.15 and the quantity purchased and used is 28,000 units.

*Compute labor price and quantity variances.*

**E26.6 (LO 3)** Lewis Company's standard labor cost of producing one unit of Product DD is 4 hours at the rate of $12.00 per hour. During August, 40,600 hours of labor are incurred at a cost of $12.15 per hour to produce 10,000 units of Product DD.

**Instructions**

**a.** Compute the total labor variance.

**b.** Compute the labor price and quantity variances.

**c.** Repeat (b), assuming the standard is 4.1 hours of direct labor at $12.25 per hour.

*Compute materials and labor variances.*

Excel

**E26.7 (LO 2, 3)** Levine Inc., which produces a single product, has prepared the following standard cost sheet for one unit of the product.

| | |
|---|---|
| Direct materials (8 pounds at $2.50 per pound) | $20 |
| Direct labor (3 hours at $12.00 per hour) | $36 |

During the month of April, the company manufactures 230 units and incurs the following actual costs.

| | |
|---|---|
| Direct materials purchased and used (1,900 pounds) | $5,035 |
| Direct labor (700 hours) | $8,120 |

**Instructions**

Compute the total, price, and quantity variances for materials and labor.

*Compute the materials and labor variances and list reasons for unfavorable variances.*

**E26.8 (LO 2, 3)** Writing The following direct materials and direct labor data pertain to the operations of Laurel Company for the month of August.

| Costs | | Quantities | |
|---|---|---|---|
| Actual labor rate | $13 per hour | Actual hours incurred and used | 4,150 hours |
| Actual materials price | $128 per ton | Actual quantity of materials purchased and used | 1,220 tons |
| Standard labor rate | $12.50 per hour | Standard hours used | 4,300 hours |
| Standard materials price | $130 per ton | Standard quantity of materials used | 1,200 tons |

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**Instructions**

**a.** Compute the total, price, and quantity variances for materials and labor.

**b.** Provide two possible explanations for each of the unfavorable variances calculated above, and suggest where responsibility for the unfavorable result might be placed.

**E26.9 (LO 2, 3)** You have been given the following information about the production of Usher Co., and are asked to provide the plant manager with information for a meeting with the vice president of operations.

*Determine amounts from variance report.*

| | Standard Cost Card |
|---|---|
| Direct materials (5 pounds at $4 per pound) | $20.00 |
| Direct labor (0.8 hours at $10) | 8.00 |
| Variable overhead (0.8 hours at $3 per hour) | 2.40 |
| Fixed overhead (0.8 hours at $7 per hour) | 5.60 |
| | $36.00 |

The following is a variance report for the most recent period of operations.

| | | Variances | |
|---|---|---|---|
| Costs | Total Standard Cost | Price | Quantity |
| Direct materials | $410,000 | $2,095 F | $ 9,000 U |
| Direct labor | 164,000 | 3,906 U | 22,000 U |

**Instructions**

**a.** How many units were produced during the period?

**b.** How many pounds of raw materials were purchased and used during the period?

**c.** What was the actual cost per pound of raw materials?

**d.** How many actual direct labor hours were worked during the period?

**e.** What was the actual rate paid per direct labor hour?

(CGA adapted)

**E26.10 (LO 3, 4)** During March 2020, Toby Tool & Die Company worked on four jobs. A review of direct labor costs reveals the following summary data.

*Prepare a variance report for direct labor.*

| Job | Actual | | Standard | | Total |
|---|---|---|---|---|---|
| Number | Hours | Costs | Hours | Costs | Variance |
| A257 | 221 | $4,420 | 225 | $4,500 | $ 80 F |
| A258 | 450 | 9,450 | 430 | 8,600 | 850 U |
| A259 | 300 | 6,180 | 300 | 6,000 | 180 U |
| A260 | 116 | 2,088 | 110 | 2,200 | 112 F |
| Total variance | | | | | $838 U |

Analysis reveals that Job A257 was a repeat job. Job A258 was a rush order that required overtime work at premium rates of pay. Job A259 required a more experienced replacement worker on one shift. Work on Job A260 was done for one day by a new trainee when a regular worker was absent.

**Instructions**

Prepare a report for the plant supervisor on direct labor cost variances for March. The report should have columns for (1) Job No., (2) Actual Hours, (3) Standard Hours, (4) Quantity Variance, (5) Actual Rate, (6) Standard Rate, (7) Price Variance, and (8) Explanation.

**E26.11 (LO 3)** Manufacturing overhead data for the production of Product H by Shakira Company, assuming the company uses a standard cost system, are as follows.

*Compute overhead variance.*

| | |
|---|---|
| Overhead incurred for 52,000 actual direct labor hours worked | $263,000 |
| Overhead rate (variable $3; fixed $2) at normal capacity of 54,000 direct labor hours | $5 |
| Standard hours allowed for work done | 52,000 |

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**Instructions**

Compute the total overhead variance.

*Compute overhead variances.*

**E26.12 (LO 3)** Byrd Company produces one product, a putter called GO-Putter. Byrd uses a standard cost system and determines that it should take one hour of direct labor to produce one GO-Putter. The normal production capacity for this putter is 100,000 units per year. The total budgeted overhead at normal capacity is $850,000 comprised of $250,000 of variable costs and $600,000 of fixed costs. Byrd applies overhead on the basis of direct labor hours.

During the current year, Byrd produced 95,000 putters, worked 94,000 direct labor hours, and incurred variable overhead costs of $256,000 and fixed overhead costs of $600,000.

**Instructions**

**a.** Compute the predetermined variable overhead rate and the predetermined fixed overhead rate.

**b.** Compute the applied overhead for Byrd for the year.

**c.** Compute the total overhead variance.

*Compute variances for materials.*

**E26.13 (LO 2, 3)** Writing Ceelo Company purchased (at a cost of $10,200) and used 2,400 pounds of materials during May. Ceelo's standard cost of materials per unit produced is based on 2 pounds per unit at a cost $5 per pound. Production in May was 1,050 units.

**Instructions**

**a.** Compute the total, price, and quantity variances for materials.

**b.** Assume Ceelo also had an unfavorable labor quantity variance. What is a possible scenario that would provide one cause for the variances computed in (a) and the unfavorable labor quantity variance?

*Prepare a variance report.*

**E26.14 (LO 2, 4)** Service Picard Landscaping plants grass seed as the basic landscaping for business campuses. During a recent month, the company worked on three projects (Remington, Chang, and Wyco). The company is interested in controlling the materials costs, namely the grass seed, for these plantings projects.

In order to provide management with useful cost control information, the company uses standard costs and prepares monthly variance reports. Analysis reveals that the purchasing agent mistakenly purchased poor-quality seed for the Remington project. The Chang project, however, received higher-than-standard-quality seed that was on sale. The Wyco project received standard-quality seed. However, the price had increased and a new employee was used to spread the seed.

Shown below are quantity and cost data for each project.

| | Actual | | Standard | | Total |
|---|---|---|---|---|---|
| Project | Quantity | Costs | Quantity | Costs | Variance |
| Remington | 500 lbs. | $1,200 | 460 lbs. | $1,150 | $ 50 U |
| Chang | 400 | 920 | 410 | 1,025 | 105 F |
| Wyco | 550 | 1,430 | 480 | 1,200 | 230 U |
| Total variance | | | | | $175 U |

**Instructions**

**a.** Prepare a variance report for the purchasing department with the following columns: (1) Project, (2) Actual Pounds Purchased, (3) Actual Price per Pound, (4) Standard Price per Pound, (5) Price Variance, and (6) Explanation.

**b.** Prepare a variance report for the production department with the following columns: (1) Project, (2) Actual Pounds, (3) Standard Pounds, (4) Standard Price per Pound, (5) Quantity Variance, and (6) Explanation.

*Complete variance report.*

**E26.15 (LO 4)** Urban Corporation prepared the following variance report.

**Urban Corporation**
**Variance Report—Purchasing Department**
**For the Week Ended January 9, 2020**

| Type of Materials | Quantity Purchased | Actual Price | Standard Price | Price Variance | Explanation |
|---|---|---|---|---|---|
| Rogue11 | ? lbs. | $5.20 | $5.00 | $5,500 ? | Price increase |
| Storm17 | 7,000 oz. | ? | 3.30 | 1,050 U | Rush order |
| Beast29 | 22,000 units | 0.40 | ? | 660 F | Bought larger quantity |

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**Instructions**

Fill in the appropriate amounts or letters for the question marks in the report.

**E26.16 (LO 4)** Fisk Company uses a standard cost accounting system. During January, the company reported the following manufacturing variances. *Prepare income statement for management.*

| | | | |
|---|---|---|---|
| Materials price variance | $1,200 U | Labor quantity variance | $750 U |
| Materials quantity variance | 800 F | Overhead variance | 800 U |
| Labor price variance | 550 U | | |

In addition, 8,000 units of product were sold at $8 per unit. Each unit sold had a standard cost of $5. Selling and administrative expenses were $8,000 for the month.

**Instructions**

Prepare an income statement for management for the month ended January 31, 2020.

**E26.17 (LO 1, 4)** The following is a list of terms related to performance evaluation. *Identify performance evaluation terminology.*

1. Balanced scorecard
2. Variance
3. Learning and growth perspective
4. Nonfinancial measures
5. Customer perspective
6. Internal process perspective
7. Ideal standards
8. Normal standards

**Instructions**

Match each of the following descriptions with one of the terms above.

**a.** The difference between total actual costs and total standard costs.

**b.** An efficient level of performance that is attainable under expected operating conditions.

**c.** An approach that incorporates financial and nonfinancial measures in an integrated system that links performance measurement and a company's strategic goals.

**d.** A viewpoint employed in the balanced scorecard to evaluate how well a company develops and retains its employees.

**e.** An evaluation tool that is not based on dollars.

**f.** A viewpoint employed in the balanced scorecard to evaluate the company from the perspective of those people who buy its products or services.

**g.** An optimum level of performance under perfect operating conditions.

**h.** A viewpoint employed in the balanced scorecard to evaluate the efficiency and effectiveness of the company's value chain.

**E26.18 (LO 4)** Indicate which of the four perspectives in the balanced scorecard is most likely associated with the objectives that follow. *Identity balanced scorecard perspectives.*

1. Percentage of repeat customers.
2. Number of suggestions for improvement from employees.
3. Contribution margin.
4. Brand recognition.
5. Number of cross-trained employees.
6. Amount of setup time.

**E26.19 (LO 4)** Indicate which of the four perspectives in the balanced scorecard is most likely associated with the objectives that follow. *Identify balance scorecard perspectives.*

1. Ethics violations.
2. Credit rating.
3. Customer retention.
4. Stockouts.
5. Reportable accidents.
6. Brand recognition.

***E26.20 (LO 5)** Vista Company installed a standard cost system on January 1. Selected transactions for the month of January are as follows. *Journalize entries in a standard cost accounting system.*

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1. Purchased 18,000 units of raw materials on account at a cost of $4.50 per unit. Standard cost was $4.40 per unit.
2. Issued 18,000 units of raw materials for jobs that required 17,500 standard units of raw materials.
3. Incurred 15,300 actual hours of direct labor at an actual rate of $5.00 per hour. The standard rate is $5.50 per hour. (Credit Factory Wages Payable.)
4. Performed 15,300 hours of direct labor on jobs when standard hours were 15,400.
5. Applied overhead to jobs at the rate of 100% of direct labor cost for standard hours allowed.

**Instructions**

Journalize the January transactions.

*Answer questions concerning missing entries and balances.*

***E26.21 (LO 2, 3, 5)** Lopez Company uses a standard cost accounting system. Some of the ledger accounts have been destroyed in a fire. The controller asks your help in reconstructing some missing entries and balances.

**Instructions**

Answer the following questions.

**a.** Materials Price Variance shows a $2,000 unfavorable balance. Accounts Payable shows $138,000 of raw materials purchases. What was the amount debited to Raw Materials Inventory for raw materials purchased?

**b.** Materials Quantity Variance shows a $3,000 favorable balance. Raw Materials Inventory shows a zero balance. What was the amount debited to Work in Process Inventory for direct materials used?

**c.** Labor Price Variance shows a $1,500 favorable balance. Factory Labor shows a debit of $145,000 for wages incurred. What was the amount credited to Factory Wages Payable?

**d.** Factory Labor shows a credit of $145,000 for direct labor used. Labor Quantity Variance shows a $900 favorable balance. What was the amount debited to Work in Process for direct labor used?

**e.** Overhead applied to Work in Process totaled $165,000. If the total overhead variance was $1,200 favorable, what was the amount of overhead costs debited to Manufacturing Overhead?

*Journalize entries for materials and labor variances.*

***E26.22 (LO 5)** Data for Levine Inc. are given in E26.7.

**Instructions**

Journalize the entries to record the materials and labor variances.

*Compute manufacturing overhead variances and interpret findings.*

***E26.23 (LO 6)** **Writing** The information shown below was taken from the annual manufacturing overhead cost budget of Connick Company.

| | |
|---|---|
| Variable manufacturing overhead costs | $34,650 |
| Fixed manufacturing overhead costs | $19,800 |
| Normal production level in labor hours | 16,500 |
| Normal production level in units | 4,125 |
| Standard labor hours per unit | 4 |

During the year, 4,050 units were produced, 16,100 hours were worked, and the actual manufacturing overhead was $55,500. Actual fixed manufacturing overhead costs equaled budgeted fixed manufacturing overhead costs. Overhead is applied on the basis of direct labor hours.

**Instructions**

**a.** Compute the total, fixed, and variable predetermined manufacturing overhead rates.

**b.** Compute the total, controllable, and volume overhead variances.

**c.** Briefly interpret the overhead controllable and volume variances computed in (b).

*Compute overhead variances.*

***E26.24 (LO 6)** **Service** The loan department of Calgary Bank uses standard costs to determine the overhead cost of processing loan applications. During the current month, a fire occurred, and the accounting records for the department were mostly destroyed. The following data were salvaged from the ashes.

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| | |
|---|---|
| Standard variable overhead rate per hour | $9 |
| Standard hours per application | 2 |
| Standard hours allowed | 2,000 |
| Standard fixed overhead rate per hour | $6 |
| Actual fixed overhead cost | $12,600 |
| Variable overhead budget based on standard hours allowed | $18,000 |
| Fixed overhead budget | $12,600 |
| Overhead controllable variance | $ 1,200 U |

**Instructions**

**a.** Determine the following.

**1.** Total actual overhead cost.

**2.** Actual variable overhead cost.

**3.** Variable overhead costs applied.

**4.** Fixed overhead costs applied.

**5.** Overhead volume variance.

**b.** Determine how many loans were processed.

*E26.25 (LO 6) Seacrest Company's overhead rate was based on estimates of $200,000 for overhead costs and 20,000 direct labor hours. Seacrest's standards allow 2 hours of direct labor per unit produced. Production in May was 900 units, and actual overhead incurred in May was $19,500. The overhead budgeted for 1,800 standard direct labor hours is $17,600 ($5,000 fixed and $12,600 variable). *Compute variances.*

**Instructions**

**a.** Compute the total, controllable, and volume variances for overhead.

**b.** What are possible causes of the variances computed in part (a)?

## Problems: Set A

P26.1A (LO 2, 3) Rogen Corporation manufactures a single product. The standard cost per unit of product is shown below. *Compute variances.*

| | |
|---|---|
| Direct materials—1 pound plastic at $7.00 per pound | $ 7.00 |
| Direct labor—1.6 hours at $12.00 per hour | 19.20 |
| Variable manufacturing overhead | 12.00 |
| Fixed manufacturing overhead | 4.00 |
| Total standard cost per unit | $42.20 |

The predetermined manufacturing overhead rate is $10 per direct labor hour ($16.00 ÷ 1.6). It was computed from a master manufacturing overhead budget based on normal production of 8,000 direct labor hours (5,000 units) for the month. The master budget showed total variable costs of $60,000 ($7.50 per hour) and total fixed overhead costs of $20,000 ($2.50 per hour). Actual costs for October in producing 4,800 units were as follows.

| | |
|---|---|
| Direct materials (5,100 pounds) | $ 36,720 |
| Direct labor (7,400 hours) | 92,500 |
| Variable overhead | 59,700 |
| Fixed overhead | 21,000 |
| Total manufacturing costs | $209,920 |

The purchasing department buys the quantities of raw materials that are expected to be used in production each month. Raw materials inventories, therefore, can be ignored.

**Instructions**

**a.** Compute all of the materials and labor variances. a. MPV $1,020 U

**b.** Compute the total overhead variance.

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*Compute variances, and prepare income statement.*

Excel

**P26.2A (LO 2, 3, 4)** Ayala Corporation accumulates the following data relative to jobs started and finished during the month of June 2020.

| Costs and Production Data | Actual | Standard |
|---|---|---|
| Raw materials unit cost | $2.25 | $2.10 |
| Raw materials units | 10,600 | 10,000 |
| Direct labor payroll | $120,960 | $120,000 |
| Direct labor hours | 14,400 | 15,000 |
| Manufacturing overhead incurred | $189,500 | |
| Manufacturing overhead applied | | $193,500 |
| Machine hours expected to be used at normal capacity | | 42,500 |
| Budgeted fixed overhead for June | | $55,250 |
| Variable overhead rate per machine hour | | $3.00 |
| Fixed overhead rate per machine hour | | $1.30 |

Overhead is applied on the basis of standard machine hours. Three hours of machine time are required for each direct labor hour. The jobs were sold for $400,000. Selling and administrative expenses were $40,000. Assume that the amount of raw materials purchased equaled the amount used.

**Instructions**

a. LQV $4,800 F

**a.** Compute all of the variances for (1) direct materials and (2) direct labor.

**b.** Compute the total overhead variance.

**c.** Prepare an income statement for management. (Ignore income taxes.)

*Compute and identify significant variances.*

**P26.3A (LO 2, 3, 4)** Writing Rudd Clothiers is a small company that manufactures tall-men's suits. The company has used a standard cost accounting system. In May 2020, 11,250 suits were produced. The following standard and actual cost data applied to the month of May when normal capacity was 14,000 direct labor hours. All materials purchased were used.

| Cost Element | Standard (per unit) | Actual |
|---|---|---|
| Direct materials | 8 yards at $4.40 per yard | $375,575 for 90,500 yards ($4.15 per yard) |
| Direct labor | 1.2 hours at $13.40 per hour | $200,925 for 14,250 hours ($14.10 per hour) |
| Overhead | 1.2 hours at $6.10 per hour (fixed $3.50; variable $2.60) | $49,000 fixed overhead<br>$37,000 variable overhead |

Overhead is applied on the basis of direct labor hours. At normal capacity, budgeted fixed overhead costs were $49,000, and budgeted variable overhead was $36,400.

**Instructions**

a. MPV $22,625 F

**a.** Compute the total, price, and quantity variances for (1) materials and (2) labor.

**b.** Compute the total overhead variance.

**c.** Which of the materials and labor variances should be investigated if management considers a variance of more than 4% from standard to be significant?

*Answer questions about variances.*

**P26.4A (LO 2, 3)** Kansas Company uses a standard cost accounting system. In 2020, the company produced 28,000 units. Each unit took several pounds of direct materials and 1.6 standard hours of direct labor at a standard hourly rate of $12.00. Normal capacity was 50,000 direct labor hours. During the year, 117,000 pounds of raw materials were purchased at $0.92 per pound. All materials purchased were used during the year.

**Instructions**

**a.** If the materials price variance was $3,510 favorable, what was the standard materials price per pound?

b. 4.0 pounds

**b.** If the materials quantity variance was $4,750 unfavorable, what was the standard materials quantity per unit?

**c.** What were the standard hours allowed for the units produced?

**d.** If the labor quantity variance was $7,200 unfavorable, what were the actual direct labor hours worked?

**e.** If the labor price variance was $9,080 favorable, what was the actual rate per hour?

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**f.** If total budgeted manufacturing overhead was $360,000 at normal capacity, what was the predetermined overhead rate?

f. $7.20 per DLH

**g.** What was the standard cost per unit of product?

**h.** How much overhead was applied to production during the year?

**i.** Using one or more answers above, what were the total costs assigned to work in process?

**P26.5A (LO 2, 3, 4)** Service Writing Hart Labs, Inc. provides mad cow disease testing for both state and federal governmental agricultural agencies. Because the company's customers are governmental agencies, prices are strictly regulated. Therefore, Hart Labs must constantly monitor and control its testing costs. Shown below are the standard costs for a typical test.

*Compute variances, prepare an income statement, and explain unfavorable variances.*

| | |
|---|---|
| Direct materials (2 test tubes @ $1.46 per tube) | $ 2.92 |
| Direct labor (1 hour @ $24 per hour) | 24.00 |
| Variable overhead (1 hour @ $6 per hour) | 6.00 |
| Fixed overhead (1 hour @ $10 per hour) | 10.00 |
| Total standard cost per test | $42.92 |

The lab does not maintain an inventory of test tubes. As a result, the tubes purchased each month are used that month. Actual activity for the month of November 2020, when 1,475 tests were conducted, resulted in the following.

| | |
|---|---|
| Direct materials (3,050 test tubes) | $ 4,270 |
| Direct labor (1,550 hours) | 35,650 |
| Variable overhead | 7,400 |
| Fixed overhead | 15,000 |

Monthly budgeted fixed overhead is $14,000. Revenues for the month were $75,000, and selling and administrative expenses were $5,000.

### Instructions

**a.** Compute the price and quantity variances for direct materials and direct labor.

a. LQV $1,800 U

**b.** Compute the total overhead variance.

**c.** Prepare an income statement for management.

**d.** Provide possible explanations for each unfavorable variance.

***P26.6A (LO 2, 3, 4, 5)** Jorgensen Corporation uses standard costs with its job order cost accounting system. In January, an order (Job No. 12) for 1,900 units of Product B was received. The standard cost of one unit of Product B is as follows.

*Journalize and post standard cost entries, and prepare income statement.*

Excel

| | | |
|---|---|---|
| Direct materials | 3 pounds at $1.00 per pound | $ 3.00 |
| Direct labor | 1 hour at $8.00 per hour | 8.00 |
| Overhead | 2 hours (variable $4.00 per machine hour; fixed $2.25 per machine hour) | 12.50 |
| Standard cost per unit | | $23.50 |

Normal capacity for the month was 4,200 machine hours. During January, the following transactions applicable to Job No. 12 occurred.

1. Purchased 6,200 pounds of raw materials on account at $1.05 per pound.
2. Requisitioned 6,200 pounds of raw materials for Job No. 12.
3. Incurred 2,000 hours of direct labor at a rate of $7.80 per hour.
4. Worked 2,000 hours of direct labor on Job No. 12.
5. Incurred manufacturing overhead on account $25,000.
6. Applied overhead to Job No. 12 on basis of standard machine hours allowed.
7. Completed Job No. 12.
8. Billed customer for Job No. 12 at a selling price of $65,000.

### Instructions

**a.** Journalize the transactions.

**b.** Post to the job order cost accounts.

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**c.** Prepare the entry to recognize the total overhead variance.

d. NI $15,890

**d.** Prepare the January 2020 income statement for management. Assume selling and administrative expenses were $2,000.

*Compute overhead controllable and volume variances.*

***P26.7A (LO 6)** Using the information in P26.1A, compute the overhead controllable variance and the overhead volume variance.

*Compute overhead controllable and volume variances.*

***P26.8A (LO 6)** Using the information in P26.2A, compute the overhead controllable variance and the overhead volume variance.

*Compute overhead controllable and volume variances.*

***P26.9A (LO 6)** Using the information in P26.3A, compute the overhead controllable variance and the overhead volume variance.

*Compute overhead controllable and volume variances.*

***P26.10A (LO 6)** Using the information in P26.5A, compute the overhead controllable variance and the overhead volume variance.

## Continuing Cases

### Current Designs

**CD26** The executive team at **Current Designs** has gathered to evaluate the company's operations for the last month. One of the topics on the agenda is the special order from Huegel Hollow, which was presented in CD2. Recall that Current Designs had a special order to produce a batch of 20 kayaks for a client, and you were asked to determine the cost of the order and the cost per kayak.

Mike Cichanowski asked the others if the special order caused any particular problems in the production process. Dave Thill, the production manager, made the following comments: "Since we wanted to complete this order quickly and make a good first impression on this new customer, we had some of our most experienced type I workers run the rotomold oven and do the trimming. They were very efficient and were able to complete that part of the manufacturing process even more quickly than the regular crew. However, the finishing on these kayaks required a different technique than what we usually use, so our type II workers took a little longer than usual for that part of the process."

Deb Welch, who is in charge of the purchasing function, said, "We had to pay a little more for the polyethylene powder for this order because the customer wanted a color that we don't usually stock. We also ordered a little extra since we wanted to make sure that we had enough to allow us to calibrate the equipment. The calibration was a little tricky, and we used all of the powder that we had purchased. Since the number of kayaks in the order was fairly small, we were able to use some rope and other parts that were left over from last year's production in the finishing kits. We've seen a price increase for these components in the last year, so using the parts that we already had in inventory cut our costs for the finishing kits."

#### Instructions

**a.** Based on the comments above, predict whether each of the following variances will be favorable or unfavorable. If you don't have enough information to make a prediction, use "NEI" to indicate "Not Enough Information."

1. Quantity variance for polyethylene powder.
2. Price variance for polyethylene powder.
3. Quantity variance for finishing kits.
4. Price variance for finishing kits.
5. Quantity variance for type I workers.
6. Price variance for type I workers.
7. Quantity variance for type II workers.
8. Price variance for type II workers.

**b.** Diane Buswell examined some of the accounting records and reported that Current Designs purchased 1,200 pounds of pellets for this order at a total cost of $2,040. Twenty (20) finishing kits were assembled at a total cost of $3,240. The payroll records showed that the type I employees worked 38 hours on this project at a total cost of $570. The type II finishing employees worked 65 hours at a total cost of $796.25. A total of 20 kayaks were produced for this order.

The standards that had been developed for this model of kayak were used in CD2 and are reproduced here. For each kayak:

54 pounds of polyethylene powder at $1.50 per pound

1 finishing kit (rope, seat, hardware, etc.) at $170

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2 hours of type I labor from people who run the oven and trim the plastic at a standard wage rate of $15 per hour

3 hours of type II labor from people who attach the hatches and seat and other hardware at a standard wage rate of $12 per hour.

Calculate the eight variances that are listed in part (a) of this problem.

### Waterways

(This is a continuation of the Waterways case from Chapters 19–25.)

**WP26** Waterways Corporation uses very stringent standard costs in evaluating its manufacturing efficiency. These standards are not "ideal" at this point, but management is working toward that as a goal. This problem asks you to calculate and evaluate the company's variances.

*Go to* **WileyPLUS** *for complete case details and instructions.*

## Expand Your Critical Thinking

### Decision-Making Across the Organization

**CT26.1** **Service** Milton Professionals, a management consulting firm, specializes in strategic planning for financial institutions. James Hahn and Sara Norton, partners in the firm, are assembling a new strategic planning model for use by clients. The model is designed for use on most personal computers and replaces a rather lengthy manual model currently marketed by the firm. To market the new model, James and Sara will need to provide clients with an estimate of the number of labor hours and computer time needed to operate the model. The model is currently being test-marketed at five small financial institutions. These financial institutions are listed below, along with the number of combined computer/labor hours used by each institution to run the model one time.

| Financial Institutions | Computer/Labor Hours Required |
|---|---|
| Midland National | 25 |
| First State | 45 |
| Financial Federal | 40 |
| Pacific America | 30 |
| Lakeview National | 30 |
| Total | 170 |
| Average | 34 |

Any company that purchases the new model will need to purchase user manuals for the system. User manuals will be sold to clients in cases of 20, at a cost of $320 per case. One manual must be used each time the model is run because each manual includes a nonreusable computer-accessed password for operating the system. Also required are specialized computer forms that are sold only by Milton. The specialized forms are sold in packages of 250, at a cost of $60 per package. One application of the model requires the use of 50 forms. This amount includes two forms that are generally wasted in each application due to printer alignment errors. The overall cost of the strategic planning model to clients is $12,000. Most clients will use the model four times annually.

Milton must provide its clients with estimates of ongoing costs incurred in operating the new planning model, and would like to do so in the form of standard costs.

#### Instructions

With the class divided into groups, answer the following.

**a.** What factors should be considered in setting a standard for computer/labor hours?

**b.** What alternatives for setting a standard for computer/labor hours might be used?

**c.** What standard for computer/labor hours would you select? Justify your answer.

**d.** Determine the standard materials cost associated with the user manuals and computer forms for each application of the strategic planning model.

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## Managerial Analysis

*CT26.2 Ana Carillo and Associates is a medium-sized company located near a large metropolitan area in the Midwest. The company manufactures cabinets of mahogany, oak, and other fine woods for use in expensive homes, restaurants, and hotels. Although some of the work is custom, many of the cabinets are a standard size.

One such non-custom model is called Luxury Base Frame. Normal production is 1,000 units. Each unit has a direct labor hour standard of 5 hours. Overhead is applied to production based on standard direct labor hours. During the most recent month, only 900 units were produced; 4,500 direct labor hours were allowed for standard production, but only 4,000 hours were used. Standard and actual overhead costs were as follows.

| | Standard (1,000 units) | Actual (900 units) |
|---|---|---|
| Indirect materials | $ 12,000 | $ 12,300 |
| Indirect labor | 43,000 | 51,000 |
| (Fixed) Manufacturing supervisors salaries | 22,500 | 22,000 |
| (Fixed) Manufacturing office employees salaries | 13,000 | 12,500 |
| (Fixed) Engineering costs | 27,000 | 25,000 |
| Computer costs | 10,000 | 10,000 |
| Electricity | 2,500 | 2,500 |
| (Fixed) Manufacturing building depreciation | 8,000 | 8,000 |
| (Fixed) Machinery depreciation | 3,000 | 3,000 |
| (Fixed) Trucks and forklift depreciation | 1,500 | 1,500 |
| Small tools | 700 | 1,400 |
| (Fixed) Insurance | 500 | 500 |
| (Fixed) Property taxes | 300 | 300 |
| Total | $144,000 | $150,000 |

### Instructions

**a.** Determine the overhead application rate.

**b.** Determine how much overhead was applied to production.

**c.** Calculate the total overhead variance, controllable variance, and volume variance.

**d.** Decide which overhead variances should be investigated.

**e.** Discuss causes of the overhead variances. What can management do to improve its performance next month?

## Real-World Focus

CT26.3 **Glassmaster Company** is organized as two divisions and one subsidiary. One division focuses on the manufacture of filaments such as fishing line and sewing thread; the other division manufactures antennas and specialty fiberglass products. Its subsidiary manufactures flexible steel wire controls and molded control panels.

The annual report of Glassmaster provides the following information.

**Glassmaster Company**
Management Discussion

Gross profit margins for the year improved to 20.9% of sales compared to last year's 18.5%. All operations reported improved margins due in large part to improved operating efficiencies as a result of cost reduction measures implemented during the second and third quarters of the fiscal year and increased manufacturing throughout due to higher unit volume sales. Contributing to the improved margins was a favorable materials price variance due to competitive pricing by suppliers as a result of soft demand for petrochemical-based products. This favorable variance is temporary and will begin to reverse itself as stronger worldwide demand for commodity products improves in tandem with the economy. Partially offsetting these positive effects on profit margins were competitive pressures on sales prices of certain product lines. The company responded with pricing strategies designed to maintain and/or increase market share.

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### Instructions

**a.** Is it apparent from the information whether Glassmaster utilizes standard costs?

**b.** Do you think the price variance experienced should lead to changes in standard costs for the next fiscal year?

**CT26.4** Service The **Balanced Scorecard Institute** is a great resource for information about implementing the balanced scorecard. One item of interest provided at its website is an example of a balanced scorecard for a regional airline.

### Instructions

Go to the Balanced Scorecard Institute website, do a search on "Examples and Success Stories," scroll down to select the Regional Airline example under Commercial Organizations, and then answer the following questions.

**a.** What are the objectives identified for the airline for each perspective?

**b.** What measures are used for the objectives in the customer perspective?

**c.** What initiatives are planned to achieve the objective in the learning perspective?

## Communication Activity

**CT26.5** The setting of standards is critical to the effective use of standards in evaluating performance.

### Instructions

Explain the following in a memo to your instructor.

**a.** The comparative advantages and disadvantages of ideal versus normal standards.

**b.** The factors that should be included in setting the price and quantity standards for direct materials, direct labor, and manufacturing overhead.

## Ethics Case

**CT26.6** At Symond Company, production workers in the Painting Department are paid on the basis of productivity. The labor time standard for a unit of production is established through periodic time studies conducted by Douglas Management Consultants. In a time study, the actual time required to complete a specific task by a worker is observed. Allowances are then made for preparation time, rest periods, and cleanup time. Bill Carson is one of several veterans in the Painting Department.

Bill is informed by Douglas that he will be used in the time study for the painting of a new product. The findings will be the basis for establishing the labor time standard for the next 6 months. During the test, Bill deliberately slows his normal work pace in an effort to obtain a labor time standard that will be easy to meet. Because it is a new product, the Douglas representative who conducted the test is unaware that Bill did not give the test his best effort.

### Instructions

**a.** Who was benefited and who was harmed by Bill's actions?

**b.** Was Bill ethical in the way he performed the time study test?

**c.** What measure(s) might the company take to obtain valid data for setting the labor time standard?

## All About You

**CT26.7** From the time you first entered school many years ago, instructors have been measuring and evaluating you by imposing standards. In addition, many of you will pursue professions that administer professional examinations to attain recognized certification. A federal commission presented proposals suggesting all public colleges and universities should require standardized tests to measure their students' learning.

### Instructions

Do an Internet search on "Union Tribune U.S. panel endorses standards for college," read the **San Diego Union-Tribune** article, and then answer the following questions.

**a.** What areas of concern did the panel's recommendations address?

**b.** What are possible advantages of standard testing?

**c.** What are possible disadvantages of standard testing?

**d.** Would you be in favor of standardized tests?

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## Considering Your Costs and Benefits

**CT26.8** Do you think that standard costs are used only in making products like wheel bearings and hamburgers? Think again. Standards influence virtually every aspect of our lives. For example, the next time you call to schedule an appointment with your doctor, ask the receptionist how many minutes the appointment is scheduled for. Doctors are under increasing pressure to see more patients each day, which means the time spent with each patient is shorter. As insurance companies and employers push for reduced medical costs, every facet of medicine has been standardized and analyzed. Doctors, nurses, and other medical staff are evaluated in every part of their operations to ensure maximum efficiency. While keeping medical treatment affordable seems like a worthy goal, what are the potential implications for the quality of health care? Does a focus on the bottom line result in a reduction in the quality of health care?

A simmering debate has centered on a very basic question: To what extent should accountants, through financial measures, influence the type of medical care that you receive? Suppose that your local medical facility is in danger of closing because it has been losing money. Should the facility put in place incentives that provide bonuses to doctors if they meet certain standard-cost targets for the cost of treating specific ailments?

**YES:** If the facility is in danger of closing, then someone should take steps to change the medical practices to reduce costs. A closed medical facility is of no use to me, my family, or the community.

**NO:** I don't want an accountant deciding the right medical treatment for me. My family and I deserve the best medical care.

### Instructions

Write a response indicating your position regarding this situation. Provide support for your view.

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# Planning for Capital Investments

## Chapter Preview

Companies like **Holland America Line** (as discussed in the following Feature Story) must constantly determine how to invest their resources. Other examples: **Dell** announced plans to spend $1 billion on data centers for cloud computing. **ExxonMobil** announced that two wells off the Brazilian coast, which it had spent hundreds of millions of dollars to drill, would produce no oil. **Renault** and **Nissan** spent over $5 billion during a nearly 20-year period to develop electric cars, such as the Leaf.

The process of making such capital expenditure decisions is referred to as **capital budgeting**. Capital budgeting involves choosing among various capital projects to find those that will maximize a company's return on its financial investment. The purpose of this chapter is to discuss the various techniques used to make effective capital budgeting decisions.

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# Feature Story

## Floating Hotels

Do you own a boat? Maybe you think it's a nice boat, but how many swimming pools, movie theaters, shopping malls, or restaurants does it have on board? If you are in the cruise-line business, like **Holland America Line**, you need all of these amenities and more just to stay afloat. Holland America Line is considered by many to be the leader of the premium luxury-liner segment.

**Carnival Corporation**, which owns Holland America Line and other cruise lines, is one of the largest vacation companies in the world. During one recent three-year period, Carnival spent more than $3 billion per year on capital expenditures. That's a big number, but keep in mind that Carnival estimates that at any given time there are 270,000 people (200,000 customers and 70,000 crew) on its 100 ships somewhere in the world.

The cruise industry is a tricky business. When times are good, customers are looking for ways to splurge. But when times get tough, people are more inclined to take a trip in a minivan than a luxury yacht. So, if you are a cruise line executive, it's important to time your investment properly. For example, during one stretch of solid global economic growth, many cruise lines decided to add capacity. The industry built 14 new ships at a total price of $4.7 billion. (That's an average price of about $330 million.) But, it takes up to three years to build one of these giant vessels. Unfortunately, by the time the ships were completed, the economy was in a nose-dive.

To maintain passenger numbers during the recession, cruise prices had to be cut by up to 40%. While the lower prices attracted lots of customers, that wasn't enough to offset an overall decline in revenue of 10%. The industry had added capacity at just the wrong time.

**Video** **Watch the *Holland America Line* video in WileyPLUS to learn more about real-world capital budgeting.**

# Chapter Outline

## LEARNING OBJECTIVES

| | | |
|---|---|---|
| **LO 1** Describe capital budgeting inputs and apply the cash payback technique. | • Cash flow information<br>• Cash payback | **DO IT! 1** Cash Payback Period |
| **LO 2** Use the net present value method. | • Equal annual cash flows<br>• Unequal annual cash flows<br>• Choosing a discount rate<br>• Simplifying assumptions<br>• Comprehensive example | **DO IT! 2** Net Present Value |
| **LO 3** Identify capital budgeting challenges and refinements. | • Intangible benefits<br>• Profitability index for mutually exclusive projects<br>• Risk analysis<br>• Post-audit of investment projects | **DO IT! 3** Profitability Index |
| **LO 4** Use the internal rate of return method. | • Comparing discounted cash flow methods | **DO IT! 4** Internal Rate of Return |
| **LO 5** Use the annual rate of return method. | • Based on accrual-accounting data | **DO IT! 5** Annual Rate of Return |

**Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.**
**Visit WileyPLUS with Orion for additional tutorials and practice opportunities.**

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# Capital Budgeting and Cash Payback

**LEARNING OBJECTIVE 1**

Describe capital budgeting inputs and apply the cash payback technique.

Many companies follow a carefully prescribed capital budgeting process similar to the following. At least once a year, top management requests proposals for projects from departments, plants, and authorized personnel. A capital budgeting committee screens the proposals and submits its findings to the officers of the company. The officers select the projects they believe to be most worthy of funding. They submit this list of projects to the board of directors. Ultimately, the directors approve the capital expenditure budget for the year. **Illustration 27.1** shows this process.

**ILLUSTRATION 27.1** **Corporate capital budget authorization process**

1. Project proposals are requested from departments, plants, and authorized personnel.

2. Proposals are screened by a capital budget committee.

3. Officers determine which projects are worthy of funding.

4. Board of directors approves capital budget.

The involvement of top management and the board of directors in the process demonstrates the importance of capital budgeting decisions. These decisions often have a significant impact on a company's future profitability. In fact, poor capital budgeting decisions can cost a lot of money. Such decisions have even led to the bankruptcy of some companies.

## Cash Flow Information

In this chapter, we look at several methods that help companies make effective capital budgeting decisions. Most of these methods employ **cash flow numbers**, rather than accrual accounting revenues and expenses. Remember from your financial accounting course that accrual accounting records **revenues** and **expenses**, rather than cash inflows and cash outflows. In fact, revenues and expenses measured during a period often differ significantly from their cash flow counterparts. Accrual accounting has advantages over cash accounting in many contexts. **For purposes of capital budgeting, though, estimated cash inflows and outflows are the preferred inputs.** Why? Because ultimately the value of all financial investments is determined by the value of cash flows received and paid.

Sometimes cash flow information is not available. In this case, companies can make adjustments to accrual accounting numbers to estimate cash flow. Often, they estimate net annual cash flow by adding back depreciation expense to net income. Depreciation expense is added back because it is an expense that does not require an outflow of cash. By adding depreciation expense back to net income, companies approximate net annual cash flow. Suppose, for

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example, that Reno Company's net income of $13,000 includes a charge for depreciation expense of $26,000. Its estimated net annual cash flow would be $39,000 ($13,000 + $26,000).

Illustration 27.2 lists some typical cash outflows and inflows related to equipment purchase and replacement.

**ILLUSTRATION 27.2**
**Typical cash flows relating to capital budgeting decisions**

| Cash Outflows |
|---|
| Initial investment |
| Repairs and maintenance |
| Increased operating costs |
| Overhaul of equipment |
| **Cash Inflows** |
| Proceeds from sale of old equipment |
| Increased cash received from customers |
| Reduced cash outflows related to operating costs |
| Salvage value of equipment |

These cash flows are the inputs that are considered relevant in capital budgeting decisions.

The capital budgeting decision, under any technique, depends in part on a variety of considerations:

- **The availability of funds:** Does the company have unlimited funds, or will it have to ration capital investments?
- **Relationships among proposed projects:** Are proposed projects independent of each other, or does the acceptance or rejection of one depend on the acceptance or rejection of another?
- **The company's basic decision-making approach:** Does the company want to produce an accept-reject decision or a ranking of desirability among possible projects?
- **The risk associated with a particular project:** How certain are the projected returns? The certainty of estimates varies with such issues as market considerations or the length of time before returns are expected.

## Illustrative Data

To compare the results of the various capital budgeting techniques, we use a continuing example. Assume that Stewart Shipping Company is considering an investment of $130,000 in new equipment. The new equipment is expected to last 10 years. It is estimated to have a zero salvage value at the end of its useful life. The expected annual cash inflows are $200,000, and the annual cash outflows are $176,000. Illustration 27.3 summarizes these data.

**ILLUSTRATION 27.3**
**Investment information for Stewart Shipping example**

| | |
|---|---|
| Initial investment | $130,000 |
| Estimated useful life | 10 years |
| Estimated salvage value | –0– |
| Estimated annual cash flows | |
| Cash inflows from customers | $200,000 |
| Cash outflows for operating costs | 176,000 |
| Net annual cash flow | $ 24,000 |

In the following two sections, we examine two popular techniques for evaluating capital investments: cash payback and the net present value method.

## Cash Payback

The **cash payback technique** identifies the time period required to recover the cost of the capital investment from the net annual cash flow produced by the investment. Illustration 27.4

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presents the formula for computing the cash payback period assuming equal annual cash flows.

| Cost of Capital Investment | ÷ | Net Annual Cash Flow | = | Cash Payback Period |
|---|---|---|---|---|

**ILLUSTRATION 27.4**
**Cash payback formula**

The cash payback period in the Stewart Shipping example is 5.42 years, computed as follows (see **Helpful Hint**).

$$\$130{,}000 \div \$24{,}000 = 5.42 \text{ years}$$

**HELPFUL HINT**
Net annual cash flow can also be approximated by "Net cash provided by operating activities" from the statement of cash flows.

The evaluation of the payback period is often related to the expected useful life of the asset. For example, assume that at Stewart Shipping a project is unacceptable if the payback period is longer than 60% of the asset's expected useful life. The 5.42-year payback period is 54.2% (5.42 ÷ 10) of the project's expected useful life. Thus, the project is acceptable.

It follows that when the payback technique is used to decide among acceptable alternative projects, **the shorter the payback period, the more attractive the investment**. This is true for two reasons: First, the earlier the investment is recovered, the sooner the company can use the cash funds for other purposes. Second, the risk of loss from obsolescence and changed economic conditions is less in a shorter payback period.

The preceding computation of the cash payback period assumes **equal** net annual cash flows in each year of the investment's life. In many cases, this assumption is not valid. In the case of **uneven** net annual cash flows, the company determines the cash payback period **when the cumulative net cash flows from the investment equal the cost of the investment**.

To illustrate, assume that Chen Company proposes an investment in a new website that is estimated to cost $300,000. **Illustration 27.5** shows the proposed investment cost, net annual cash flows, cumulative net cash flows, and the cash payback period.

| Year | Investment | Net Annual Cash Flow | Cumulative Net Cash Flow |
|---|---|---|---|
| 0 | $300,000 | | |
| 1 | | $ 60,000 | $ 60,000 |
| 2 | | 90,000 | 150,000 |
| 3 | | 90,000 | 240,000 |
| 4 | | 120,000 | 360,000 |
| 5 | | 100,000 | 460,000 |

Cash payback period = 3.5 years

**ILLUSTRATION 27.5**
**Computation of cash payback period—unequal cash flows**

As Illustration 27.5 shows, at the end of year 3, cumulative net cash flow of $240,000 is less than the investment cost of $300,000, but at the end of year 4 the cumulative cash inflow of $360,000 exceeds the investment cost. The cash flow needed in year 4 to equal the investment cost is $60,000 ($300,000 − $240,000). Assuming the cash inflow occurred evenly during year 4, we divide $60,000 by the net annual cash flow in year 4 ($120,000) to determine the point during the year when the cash payback occurs. Thus, we get 0.50 ($60,000/$120,000), or half of the year, and the cash payback period is 3.5 years.

The cash payback technique may be useful as an initial screening tool. It may be the most critical factor in the capital budgeting decision for a company that desires a fast turnaround of its investment because of a weak cash position. It also is relatively easy to compute and understand.

However, cash payback should not ordinarily be the only basis for the capital budgeting decision because it **ignores the expected profitability of the project**. To illustrate, assume that Projects A and B have the same payback period, but Project A's useful life is double the useful life of Project B. Project A's earning power, therefore, is twice as long as Project B's. A further—and major—disadvantage of this technique is that it **ignores the time value of money**. We address time value of money with the approach described in the next section.

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### DO IT! 1 | Cash Payback Period

Watertown Paper Corporation is considering adding another machine for the manufacture of corrugated cardboard. The machine would cost $900,000. It would have an estimated life of 6 years and no salvage value. The company estimates that annual cash inflows would increase by $400,000 and that annual cash outflows would increase by $190,000. Compute the cash payback period.

**ACTION PLAN**

- Annual cash inflows − Annual cash outflows = Net annual cash flow.
- Cash payback period = Cost of capital investment/Net annual cash flow.

**Solution**

| | |
|---|---|
| Estimated annual cash inflows | $400,000 |
| Estimated annual cash outflows | 190,000 |
| Net annual cash flow | $210,000 |

Cash payback period = $900,000/$210,000 = 4.3 years

Related exercise material: **BE27.1 and DO IT! 27.1.**

## Net Present Value Method

**LEARNING OBJECTIVE 2**

Use the net present value method.

The time value of money can have a significant impact on a capital budgeting decision. Cash flows that occur early in the life of an investment are worth more than those that occur later—because of the time value of money. Therefore, it is useful to recognize the timing of cash flows when evaluating projects.

Capital budgeting techniques that take into account both the time value of money and the estimated net cash flows from an investment are called **discounted cash flow techniques**. They are generally recognized as the most informative and best conceptual approaches to making capital budgeting decisions. The expected net cash flow used in discounting cash flows consists of the annual net cash flows plus the estimated liquidation proceeds (salvage value) when the asset is sold for salvage at the end of its useful life.

The primary discounted cash flow technique is the **net present value method**. A second method, discussed later in the chapter, is the **internal rate of return**. At this point, **we recommend that you examine Appendix G** to review the time value of money concepts upon which these methods are based. Also, the Excel tutorial provided in WileyPLUS for this chapter demonstrates the use of the NPV (net present value) and IRR (internal rate of return) functions in Excel.

The **net present value (NPV) method** involves discounting net cash flows to their present value and then comparing that present value with the capital outlay required by the investment. The difference between these two amounts is referred to as **net present value (NPV)**. Company management determines what interest rate to use in discounting the future net cash flows. This rate, often referred to as the **discount rate** or **required rate of return**, is discussed in a later section.

The NPV decision rule is this: **A proposal is acceptable when net present value is zero or positive**. A zero or positive NPV indicates that the rate of return on the investment equals or exceeds (respectively) the required rate of return. The **required rate of return** is management's minimum acceptable rate of return on investments, sometimes called the discount rate or cost of capital. When net present value is negative, the project is unacceptable. **Illustration 27.6** shows the net present value decision criteria.

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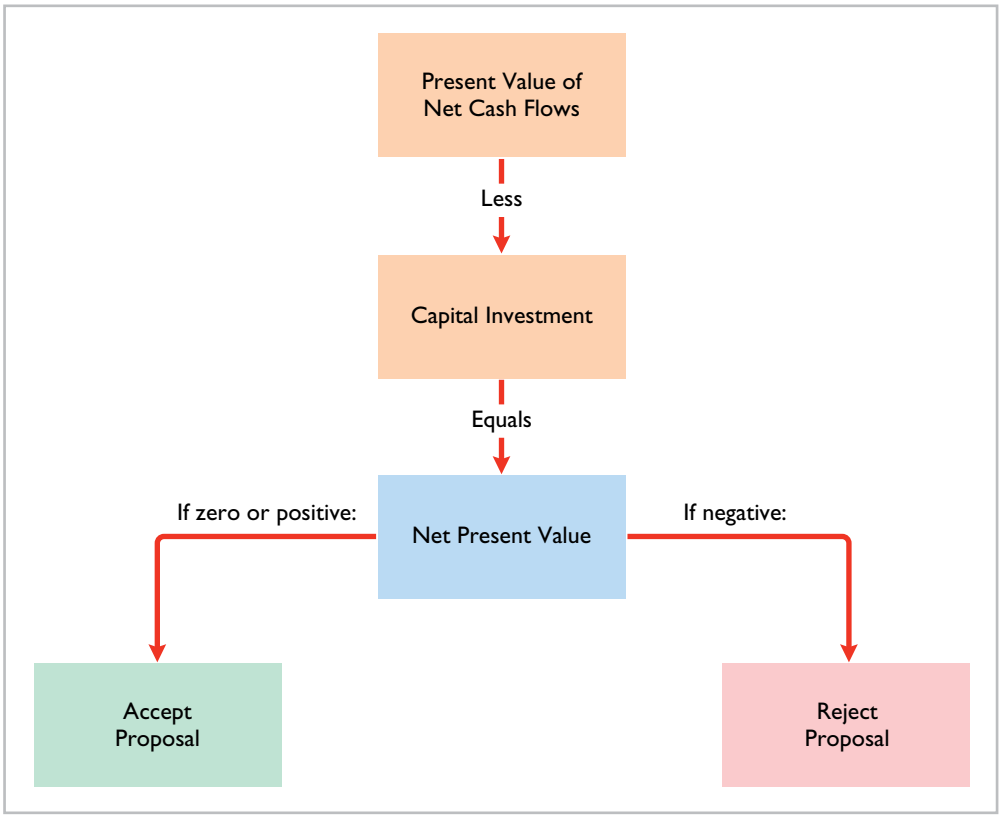


**ILLUSTRATION 27.6**
**Net present value decision criteria**

When making a selection among acceptable proposals, **the higher the positive net present value, the more attractive the investment**. The application of this method to two cases is described in the next two sections. In each case, we assume that the investment has no salvage value at the end of its useful life.

## Equal Annual Cash Flows

In our Stewart Shipping Company example, the company's net annual cash flows are $24,000. If we assume this amount **is uniform over the asset's useful life**, we can compute the present value of the net annual cash flows by using the present value of an annuity of 1 for 10 payments (from Table 4, Appendix G). Assuming a discount rate of 12%, the present value of net cash flows are as shown in Illustration 27.7 (rounded to the nearest dollar) (see Helpful Hint).

**HELPFUL HINT**
The ABC Co. expects equal cash flows over an asset's 5-year useful life. The discount factor it should use in determining present values if management wants a 12% return is 3.60478 (using Table 4).

**ILLUSTRATION 27.7**
**Computation of present value of equal net annual cash flows**

| | Present Value at 12% |
|---|---|
| Discount factor for 10 periods | 5.65022 |
| Present value of net cash flows: $24,000 × 5.65022 | $135,605 |

Illustration 27.8 shows the analysis of the proposal by the net present value method.

**ILLUSTRATION 27.8**
**Computation of net present value—equal net annual cash flows**

| | 12% |
|---|---|
| Present value of net cash flows | $135,605 |
| Less: Capital investment | 130,000 |
| Net present value | $ 5,605 |

The proposed capital expenditure is acceptable at a required rate of return of 12% because the net present value is positive. The positive NPV indicates the expected return on the investment exceeds 12%.

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## Unequal Annual Cash Flows

When net annual cash flows are unequal, we cannot use annuity tables to calculate their present value. Instead, we use tables showing the **present value of a single future amount for each annual cash flow**.

**HELPFUL HINT**

**Appendix G demonstrates the use of a financial calculator to solve time value of money problems.**

To illustrate, assume that Stewart Shipping Company expects the same total net cash flows of $240,000 over the life of the investment. But because of a declining market demand for the product over the life of the equipment, the net annual cash flows are higher in the early years and lower in the later years. The present value of the net annual cash flows is calculated as shown in Illustration 27.9, using discount factors from Table 3 in Appendix G (see Helpful Hint).

**ILLUSTRATION 27.9**

**Computation of present value of unequal annual cash flows**

| Year | Assumed Net Annual Cash Flows | Discount Factor 12% | Present Value 12% |
|---|---|---|---|
| | (1) | (2) | (1) × (2) |
| 1 | $ 34,000 | .89286 | $ 30,357 |
| 2 | 30,000 | .79719 | 23,916 |
| 3 | 27,000 | .71178 | 19,218 |
| 4 | 25,000 | .63552 | 15,888 |
| 5 | 24,000 | .56743 | 13,618 |
| 6 | 22,000 | .50663 | 11,146 |
| 7 | 21,000 | .45235 | 9,499 |
| 8 | 20,000 | .40388 | 8,078 |
| 9 | 19,000 | .36061 | 6,852 |
| 10 | 18,000 | .32197 | 5,795 |
| | $240,000 | | $144,367 |

Therefore, the analysis of the proposal by the net present value method is as shown in Illustration 27.10.

**ILLUSTRATION 27.10**

**Computation of net present value—unequal annual cash flows**

| | 12% |
|---|---|
| Present value of net cash flows | $144,367 |
| Less: Capital investment | 130,000 |
| Net present value | $ 14,367 |

In this example, the present value of the net cash flows is greater than the $130,000 capital investment. Thus, the project is acceptable at a 12% required rate of return. The difference between the present values using the 12% rate under equal cash flows ($135,605) and unequal cash flows ($144,367) is due to the pattern of the flows. Since more money is received sooner under this particular uneven cash flow scenario, its present value is greater.

### Management Insight Verizon

Trevor Smith/iStockphoto

#### Can You Hear Me—Better?

What's better than 3G wireless service? 4G. But the question for wireless service providers is whether customers will be willing to pay extra for that improvement. **Verizon** has spent billions on upgrading its networks in the past few years, so it now offers 4G LTE service to 97% of the nation. Verizon is hoping that its investment in 4G works out better than its $23 billion investment in its FIOS fiber-wired network for TV and ultrahigh-speed Internet. One analyst estimates that the present value of each FIOS customer is $800 less than the cost of the connection.

**Sources:** Martin Peers, "Investors: Beware Verizon's Generation GAP," *Wall Street Journal Online* (January 26, 2010); and Chad Fraser, "What Warren Buffett Sees in Verizon," *Investing Daily* (May 30, 2014).

**If customers are slow to initially adopt 4G, how might the conclusions of a cash payback analysis of Verizon's 4G investment differ from a present value analysis? (Go to WileyPLUS for this answer and additional questions.)**

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## Choosing a Discount Rate

Now that you understand how companies apply the net present value method, it is logical to ask a related question: How is a discount rate (required rate of return) determined in real capital budgeting decisions? In most instances, a company uses a required rate of return equal to its **cost of capital**—that is, the rate that it must pay to obtain funds from creditors and stockholders.

The cost of capital is a weighted average of the rates paid on borrowed funds as well as on funds provided by investors in the company's common stock and preferred stock (see **Helpful Hint**). If management believes a project is riskier than the company's usual line of business, the discount rate should be increased. That is, the discount rate has two elements, a cost of capital element and a risk element. Often, companies assume the risk element is equal to zero.

**HELPFUL HINT**

**Cost of capital is the rate that management expects to pay on all borrowed and equity funds. It does not relate to the cost of funding a *specific* project.**

Using an incorrect discount rate can lead to incorrect capital budgeting decisions. Consider again the Stewart Shipping example in Illustration 27.8, where we used a discount rate of 12%. Suppose that this rate does not take into account the fact that this project is riskier than most of the company's investments. A more appropriate discount rate, given the risk, might be 15%. **Illustration 27.11** compares the net present values at the two rates. At the higher, more appropriate discount rate of 15%, the net present value is negative. The negative NPV indicates that the expected rate of return on the investment is less than the required rate of return of 15%. The company should reject the project (discount factors from Appendix G, Table 4).

**ILLUSTRATION 27.11**

**Comparison of net present values at different discount rates**

| | Present Values at Different Discount Rates | |
|---|---|---|
| | **12%** | **15%** |
| Discount factor for 10 payments | 5.65022 | 5.01877 |
| Present value of net cash flows: | | |
| $24,000 × 5.65022 | $135,605 | |
| $24,000 × 5.01877 | | $120,450 |
| Less: Capital investment | 130,000 | 130,000 |
| Positive (negative) net present value | **$ 5,605** | **$ (9,550)** |

The discount rate is often referred to by alternative names, including the **required rate of return**, the **hurdle rate**, and the **cutoff rate**. Determination of the cost of capital varies somewhat depending on whether the entity is a for-profit or not-for-profit business. Calculation of the cost of capital is discussed more fully in advanced accounting and finance courses.

## Simplifying Assumptions

In our examples of the net present value method, we made a number of simplifying assumptions:

- **All cash flows occur at the end of each year.** In reality, cash flows will occur at uneven intervals throughout the year. However, it is far simpler to assume that all cash flows come at the end (or in some cases the beginning) of the year. In fact, this assumption is frequently made in practice.
- **All cash flows are immediately reinvested in another project that has a similar return.** In most capital budgeting situations, companies receive cash flows during each year of a project's life. In order to determine the return on the investment, some assumption must be made about how the cash flows are reinvested in the year that they are received. It is customary to assume that cash flows received are reinvested in some other project of similar return until the end of the project's life.
- **All cash flows can be predicted with certainty.** The outcomes of business investments are full of uncertainty, as the **Holland America Line** Feature Story shows. There is no way of knowing how popular a new product will be, how long a new machine will last, or what competitors' reactions might be to changes in a product. But, in order to

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make investment decisions, analysts must estimate future outcomes. In this chapter, we have assumed that future amounts are known with certainty.[1] In reality, little is known with certainty. More advanced capital budgeting techniques deal with uncertainty by considering the probability that various outcomes will occur.

## Comprehensive Example

Best Taste Foods is considering investing in new equipment to produce fat-free snack foods. Management believes that although demand for fat-free foods has leveled off, fat-free foods are here to stay. The estimated costs, cost of capital, and cash flows shown in **Illustration 27.12** were determined in consultation with the marketing, production, and finance departments.

**ILLUSTRATION 27.12**
**Investment information for Best Taste Foods example**

| | |
|---|---|
| Initial investment | $1,000,000 |
| Cost of equipment overhaul in 5 years | $200,000 |
| Salvage value of equipment in 10 years | $20,000 |
| Cost of capital (discount rate) | 15% |
| Estimated annual cash flows | |
| Cash inflows received from sales | $500,000 |
| Cash outflows for cost of goods sold | $200,000 |
| Maintenance costs | $30,000 |
| Other direct operating costs | $40,000 |

Remember that we are using cash flows in our analysis, not accrual revenues and expenses. Thus, for example, the direct operating costs would not include depreciation expense, since depreciation expense does not use cash. **Illustration 27.13** presents the computation of the net annual cash flows of this project.

**ILLUSTRATION 27.13**
**Computation of net annual cash flow**

| | |
|---|---|
| Cash inflows received from sales | $ 500,000 |
| Cash outflows for cost of goods sold | (200,000) |
| Maintenance costs | (30,000) |
| Other direct operating costs | (40,000) |
| **Net annual cash flow** | **$ 230,000** |

**Illustration 27.14** shows computation of the net present value for this proposed investment (discount factors from Appendix G, Tables 3 and 4).

**ILLUSTRATION 27.14**
**Computation of net present value for Best Taste Foods investment**

| Event | Time Period | Cash Flow | × | 15% Discount Factor | = | Present Value |
|---|---|---|---|---|---|---|
| Net annual cash flow | 1–10 | $ 230,000 | × | 5.01877 | = | $1,154,317 |
| Salvage value | 10 | 20,000 | | .24719 | | 4,944 |
| Less: Equipment purchase | 0 | 1,000,000 | | 1.00000 | | 1,000,000 |
| Less: Equipment overhaul | 5 | 200,000 | | .49718 | | 99,436 |
| **Net present value** | | | | | | **$ 59,825** |

Because the net present value of the project is positive, Best Taste should accept the project.

[1] One exception is a brief discussion of sensitivity analysis later in the chapter.

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### DO IT! 2 | Net Present Value

Watertown Paper Corporation is considering adding another machine for the manufacture of corrugated cardboard. The machine would cost $900,000. It would have an estimated life of 6 years and no salvage value. The company estimates that annual cash inflows would increase by $400,000 and that annual cash outflows would increase by $190,000. Management has a required rate of return of 9%. Calculate the net present value on this project and discuss whether it should be accepted.

**ACTION PLAN**

- Recall that estimated annual cash inflows − Estimated annual cash outflows = Net annual cash flow.
- Use the NPV technique to calculate the difference between net cash flows and the initial investment.
- Accept the project if the net present value is positive.

**Solution**

| | |
|---|---|
| Estimated annual cash inflows | $400,000 |
| Estimated annual cash outflows | 190,000 |
| Net annual cash flow | $210,000 |

| | Cash Flow | 9% Discount Factor | Present Value |
|---|---|---|---|
| Present value of net annual cash flows | $210,000 | 4.48592[a] | $942,043 |
| Less: Capital investment | | | 900,000 |
| Net present value | | | $ 42,043 |

[a]Table 4, Appendix G, 9%, 6 years

Since the net present value is greater than zero, Watertown should accept the project.

Related exercise material: **BE27.2, BE27.3, DO IT! 27.2, E27.1, E27.2, and E27.3.**

# Capital Budgeting Challenges and Refinements

**LEARNING OBJECTIVE 3**

Identify capital budgeting challenges and refinements.

Now that you understand how the net present value method works, we can add some "additional wrinkles." Specifically, these are the impact of intangible benefits, a way to compare mutually exclusive projects, refinements that take risk into account, and the need to conduct post-audits of investment projects.

## Intangible Benefits

The NPV evaluation techniques employed thus far rely on tangible costs and benefits that can be relatively easily quantified. Some investment projects, especially high-tech projects, fail to make it through initial capital budget screens because only the project's tangible benefits are considered. **Intangible benefits** might include increased quality, improved safety, or enhanced employee loyalty. By ignoring intangible benefits, capital budgeting techniques might incorrectly eliminate projects that could be financially beneficial to the company.

To avoid rejecting projects that actually should be accepted, analysts suggest two possible approaches:

1. Calculate net present value ignoring intangible benefits. Then, if the NPV is negative, ask whether the project offers any intangible benefits that are worth at least the amount of the negative NPV.
2. Project conservative estimates of the value of the intangible benefits, and incorporate these values into the NPV calculation.

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## Example

Assume that Berg Company is considering the purchase of a new mechanical robot to be used for soldering electrical connections. Illustration 27.15 shows the estimates related to this proposed purchase (discount factor from Appendix G, Table 4).

**ILLUSTRATION 27.15**
**Investment information for Berg Company example**

| | |
|---|---|
| Initial investment | $200,000 |
| Annual cash inflows | $ 50,000 |
| Annual cash outflows | 20,000 |
| **Net annual cash flow** | **$ 30,000** |
| Estimated life of equipment | 10 years |
| Discount rate | 12% |

| | Cash Flows | × | 12% Discount Factor | = | Present Value |
|---|---|---|---|---|---|
| Present value of net annual cash flows | $30,000 | × | 5.65022 | = | $169,507 |
| Less: Initial investment | | | | | 200,000 |
| **Net present value** | | | | | **$ (30,493)** |

Based on the negative net present value of $30,493, the proposed project is not acceptable. This calculation, however, ignores important information. First, the company's engineers believe that purchasing this machine will improve the quality of electrical connections in the company's products. As a result, future warranty costs may be reduced. Also, this higher quality may translate into higher future sales. Finally, the new machine will be safer than the current machine.

The managers at Berg Company do not have confidence in their ability to accurately estimate these potentially higher revenues and lower costs. But Berg can incorporate this new information into the capital budgeting decision in the two ways discussed earlier. First, management might simply ask whether the reduced warranty costs, increased sales, and improved safety benefits have an estimated total present value to the company of at least $30,493. If yes, then the project is acceptable.

Alternatively, analysts can estimate the annual cash flows of these benefits. In our initial calculation, we assumed each of these benefits to have a value of zero. It seems likely that their actual values are much higher than zero. Given the difficulty of estimating these benefits, however, conservative values should be assigned to them. If, after using conservative estimates, the net present value is positive, Berg should accept the project.

To illustrate, assume that Berg estimates that improved sales will increase cash inflows by $10,000 annually as a result of an increase in perceived quality. Berg also estimates that annual cost outflows would be reduced by $5,000 as a result of lower warranty claims, reduced injury claims, and fewer missed work days. Consideration of the intangible benefits results in the revised NPV calculation shown in Illustration 27.16 (discount factor from Appendix G, Table 4).

**ILLUSTRATION 27.16**
**Revised investment information for Berg Company example, including intangible benefits**

| | |
|---|---|
| Initial investment | $200,000 |
| Annual cash inflows (revised) | $ 60,000 ($50,000 + $10,000) |
| Annual cash outflows (revised) | 15,000 ($20,000 − $5,000) |
| **Net annual cash flow** | **$ 45,000** |
| Estimated life of equipment | 10 years |
| Discount rate | 12% |

| | Cash Flows | × | 12% Discount Factor | = | Present Value |
|---|---|---|---|---|---|
| Present value of net annual cash flows | $45,000 | × | 5.65022 | = | $254,260 |
| Less: Initial investment | | | | | 200,000 |
| **Net present value** | | | | | **$ 54,260** |

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Using these conservative estimates of the value of the additional benefits, Berg should accept the project.

## Ethics Insight

Carol Gering/iStockphoto

### It Need Not Cost an Arm and a Leg

Most manufacturers say that employee safety matters above everything else. But how many back up this statement with investments that improve employee safety? Recently, a woodworking hobbyist, who also happens to be a patent attorney with a Ph.D. in physics, invented a mechanism that automatically shuts down a power saw when the saw blade comes in contact with human flesh. The blade stops so quickly that only minor injuries result.

Power saws injure 40,000 Americans each year, and 4,000 of those injuries are bad enough to require amputation. Therefore, one might think that power-saw companies would be lined up to incorporate this mechanism into their saws. But, in the words of one power-tool company, "Safety doesn't sell." Since existing saw manufacturers were unwilling to incorporate the device into their saws, eventually the inventor started his own company to build the devices and sell them directly to businesses that use power saws.

**Source:** Melba Newsome, "An Edgy New Idea," *Time: Inside Business* (May 2006), p. A16.

**In addition to the obvious humanitarian benefit of reducing serious injuries, how else might the manufacturer of this product convince potential customers of its worth? (Go to WileyPLUS for this answer and additional questions.)**

# Profitability Index for Mutually Exclusive Projects

In theory, companies should accept all projects with positive NPVs. However, companies rarely are able to adopt all positive-NPV proposals. First, proposals often are **mutually exclusive**. This means that if the company adopts one proposal, it would be impossible or impractical also to adopt the other proposal. For example, a company may be considering the purchase of a new packaging machine and is looking at various brands and models. It needs only one packaging machine. Once the company has determined which brand and model to purchase, the others will not be purchased—even though they also may have positive net present values.

Even in instances where projects are not mutually exclusive, managers often must choose between various positive-NPV projects because of **limited resources**. For example, the company might have ideas for two new lines of business, each of which has a projected positive NPV. However, both of these proposals require skilled personnel, and the company determines that it will not be able to find enough skilled personnel to staff both projects. Management will have to choose the project it thinks is a better option.

When choosing between alternative proposals, it is tempting simply to choose the project with the higher NPV. Consider the following example of two mutually exclusive projects. Each is assumed to have a 10-year life and a 12% discount rate (discount factors from Appendix G, Tables 3 and 4). Illustration 27.17 shows the estimates for each project and the computation of the present value of the net cash flows.

**ILLUSTRATION 27.17**
**Investment information for mutually exclusive projects**

| | Project A | Project B |
|---|---|---|
| Initial investment | $40,000 | $ 90,000 |
| Net annual cash inflow | 10,000 | 19,000 |
| Salvage value | 5,000 | 10,000 |
| Present value of net cash flows | | |
| ($10,000 × 5.65022) + ($5,000 × .32197) | 58,112 | |
| ($19,000 × 5.65022) + ($10,000 × .32197) | | 110,574 |

Illustration 27.18 computes the net present values of Project A and Project B by subtracting the initial investment from the present value of the net cash flows.

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**ILLUSTRATION 27.18**
**Net present value computation**

| | Project A | Project B |
|---|---|---|
| Present value of net cash flows | $58,112 | $110,574 |
| Less: Initial investment | 40,000 | 90,000 |
| Net present value | **$18,112** | **$ 20,574** |

As Project B has the higher NPV, it would seem that the company should adopt it. However, Project B also requires more than twice the original investment of Project A. In choosing between the two projects, the company should also include in its calculations the amount of the original investment.

One relatively simple method of comparing alternative projects is the **profitability index**. This method takes into account both the size of the original investment and the discounted cash flows. The profitability index is calculated by dividing the present value of net cash flows that occur after the initial investment by the amount of the initial investment, as **Illustration 27.19** shows.

**ILLUSTRATION 27.19**
**Formula for profitability index**

| Present Value of Net Cash Flows | ÷ | Initial Investment | = | Profitability Index |
|---|---|---|---|---|

The profitability index allows comparison of the relative desirability of projects that require differing initial investments. Note that any project with a positive NPV will have a profitability index above 1. The profitability index for each of the mutually exclusive projects is calculated in **Illustration 27.20**.

**ILLUSTRATION 27.20**
**Calculation of profitability index**

$$\text{Profitability Index} = \frac{\text{Present Value of Net Cash Flows}}{\text{Initial Investment}}$$

| Project A | Project B |
|---|---|
| $\frac{\$58,112}{\$40,000} = 1.45$ | $\frac{\$110,574}{\$90,000} = 1.23$ |

In this case, the profitability index of Project A exceeds that of Project B. Thus, Project A is more desirable. Again, if these were not mutually exclusive projects and if resources were not limited, then the company should invest in both projects since both have positive NPVs. Additional considerations related to preference decisions are discussed in more advanced courses.

## Risk Analysis

A simplifying assumption made by many financial analysts is that projected results are known with certainty. In reality, projected results are only estimates based upon the forecaster's belief as to the most probable outcome. One approach for dealing with such uncertainty is **sensitivity analysis**. Sensitivity analysis uses a number of outcome estimates to get a sense of the variability among potential returns. An example of sensitivity analysis was presented in Illustration 27.11, where we illustrated the impact on NPV of different discount rate assumptions. A higher-risk project would be evaluated using a higher discount rate.

Similarly, to take into account that more distant cash flows are often more uncertain, a higher discount rate can be used to discount more distant cash flows. Other techniques to address uncertainty are discussed in advanced courses.

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## People, Planet, and Profit Insight

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### Big Spenders

Investments in electricity production and transmission represent some of society's biggest capital budgeting decisions. For example, billionaire Philip Anshutz is backing a project to build a 3,000-megawatt Wyoming wind farm as well as a 730-mile transmission line that would efficiently transfer the electricity to Las Vegas, where it could then travel on existing lines to locations in California. Total cost: $9 billion. This would be the biggest wind farm in the United States except that an even bigger, 4,000-megawatt wind farm is being planned by a different group of investors. In the past, these investments were made by regulated utility companies which were allowed to pass on their costs to customers and thus essentially guaranteed a steady revenue stream. Today, many of the biggest projects are instead being financed by private investors. These investors will be selling their electricity in energy markets driven by market demand. This provides for more potential upside on their investment but also more uncertainty regarding revenue flows.

**Source:** Russell Gold, "Investors Are Building Their Own Green-Power Lines," *Wall Street Journal* (April 6, 2017).

**How does the financing of today's big energy investments differ from big energy capital investments of the past, and what are the implications? (Go to WileyPLUS for this answer and additional questions.)**

# Post-Audit of Investment Projects

Any well-run organization should perform an evaluation, called a **post-audit**, of its investment projects after their completion. A post-audit is a thorough evaluation of how well a project's actual performance matches the original projections. An example of a post-audit is seen in a situation that occurred at **Campbell Soup**. The company made the original decision to invest in the Intelligent Quisine line based on management's best estimates of future cash flows. During the development phase of the project, Campbell hired an outside consulting firm to evaluate the project's potential for success. Because actual results during the initial years were far below the estimated results and because the future also did not look promising, the project was terminated.

Performing a post-audit is important for a variety of reasons. First, if managers know that the company will compare their estimates to actual results, they will be more likely to submit reasonable and accurate data when they make investment proposals. This clearly is better for the company than for managers to submit overly optimistic estimates in an effort to get pet projects approved. Second, as seen with Campbell Soup, a post-audit provides a formal mechanism by which the company can determine whether existing projects should be supported or terminated. Third, post-audits improve future investment proposals because, by evaluating past successes and failures, managers improve their estimation techniques.

A post-audit involves the same evaluation techniques used in making the original capital budgeting decision—for example, use of the NPV method. The difference is that, in the post-audit, analysts insert actual figures, where known, and they revise estimates of future amounts based on new information. The managers responsible for the estimates used in the original proposal must explain the reasons for any significant differences between their estimates and actual results.

Post-audits are not foolproof. In the case of Campbell Soup, some observers suggested that the company was too quick to abandon the project. Industry analysts suggested that with more time and more advertising expenditures, the company might have enjoyed success.

### DO IT! 3 | Profitability Index

Taz Corporation has decided to invest in renewable energy sources to meet part of its energy needs for production. It is considering solar power versus wind power. After considering cost savings as well as incremental revenues from selling excess electricity into the power grid, it has determined the following.

| | Solar | Wind |
|---|---|---|
| Present value of annual cash flows | $78,580 | $168,450 |
| Initial investment | $45,500 | $125,300 |

Determine the net present value and profitability index of each project. Which energy source should it choose?

**ACTION PLAN**

- Determine the present value of annual cash flows of each mutually exclusive project.
- Determine profitability index by dividing the present value of annual cash flows by the amount of the initial investment.
- Choose project with highest profitability index.

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**Solution**

| | Solar | Wind |
|---|---|---|
| Present value of annual cash flows | $78,580 | $168,450 |
| Less: Initial investment | 45,500 | 125,300 |
| Net present value | $33,080 | $ 43,150 |
| Profitability index | 1.73* | 1.34** |

*$78,580 ÷ $45,500
**$168,450 ÷ $125,300

While the investment in wind power generates the higher net present value, it also requires a substantially higher initial investment. The profitability index favors solar power, which suggests that the additional net present value of wind is outweighed by the cost of the initial investment. The company should choose solar power.

Related exercise material: **BE27.5, DO IT! 27.3, and E27.4.**

# Internal Rate of Return

**LEARNING OBJECTIVE 4**

Use the internal rate of return method.

The **internal rate of return method** differs from the net present value method in that it finds the **interest yield of the potential investment**. The **internal rate of return (IRR)** is the interest rate that causes the present value of the proposed capital expenditure to equal the present value of the expected net annual cash flows (that is, NPV equal to zero). Because it recognizes the time value of money, the internal rate of return method is (like the NPV method) a discounted cash flow technique.

How do we determine the internal rate of return? One way is to use a financial calculator (see Appendix G) or electronic spreadsheet (see the Excel tutorial provided in WileyPLUS) to solve for this rate. Or, we can use a trial-and-error procedure.

To illustrate, assume that Stewart Shipping Company is considering the purchase of a new front-end loader at a cost of $244,371. Net annual cash flows from this loader are estimated to be $100,000 a year for three years. To determine the internal rate of return on this front-end loader, the company finds the discount rate that results in a net present value of zero. As **Illustration 27.21** shows, at a rate of return of 10%, Stewart Shipping has a positive net present value of $4,315. At a rate of return of 12%, it has a negative net present value of $4,188. At an 11% rate, the net present value is zero. Therefore, 11% is the internal rate of return for this investment (discount factors from Appendix G, Table 3).

**ILLUSTRATION 27.21** **Estimation of internal rate of return**

| Year | Net Annual Cash Flows | Discount Factor 10% | Present Value 10% | Discount Factor 11% | Present Value 11% | Discount Factor 12% | Present Value 12% |
|---|---|---|---|---|---|---|---|
| 1 | $100,000 | .90909 | $ 90,909 | .90090 | $ 90,090 | .89286 | $ 89,286 |
| 2 | $100,000 | .82645 | 82,645 | .81162 | 81,162 | .79719 | 79,719 |
| 3 | $100,000 | .75132 | 75,132 | .73119 | 73,119 | .71178 | 71,178 |
| | | | 248,686 | | 244,371 | | 240,183 |
| Less: Initial investment | | | 244,371 | | 244,371 | | 244,371 |
| Net present value | | | $ 4,315 | | $ –0– | | $ (4,188) |

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An easier approach to solving for the internal rate of return can be used if the net annual cash flows are **equal**, as in the Stewart Shipping example. In this special case, we can find the internal rate of return using the formula provided in Illustration 27.22.

| Capital Investment | ÷ | Net Annual Cash Flows | = | Internal Rate of Return Factor |
|---|---|---|---|---|

**ILLUSTRATION 27.22**
**Formula for internal rate of return—even cash flows**

Applying this formula to the Stewart Shipping example, we find:

$$\$244{,}371 \div 100{,}000 = 2.44371$$

We then look up the factor 2.44371 in Table 4 of Appendix G in the three-payment row and find it under 11%. Row 3 is reproduced for your convenience.

**Table 4 Present Value of an Annuity of 1**

| (*n*) Payments | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 11% | 12% | 15% |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 2.77509 | 2.72325 | 2.67301 | 2.62432 | 2.57710 | 2.53130 | 2.48685 | 2.44371 | 2.40183 | 2.28323 |

Recognize that if the cash flows are **uneven**, then a trial-and-error approach or a financial calculator or computerized spreadsheet must be used.

Once managers know the internal rate of return, they compare it to the company's required rate of return (the discount rate). The IRR decision rule is as follows: **Accept the project when the internal rate of return is equal to or greater than the required rate of return. Reject the project when the internal rate of return is less than the required rate of return.** Illustration 27.23 shows these relationships. The internal rate of return method is widely used in practice, largely because most managers find the internal rate of return easy to interpret.

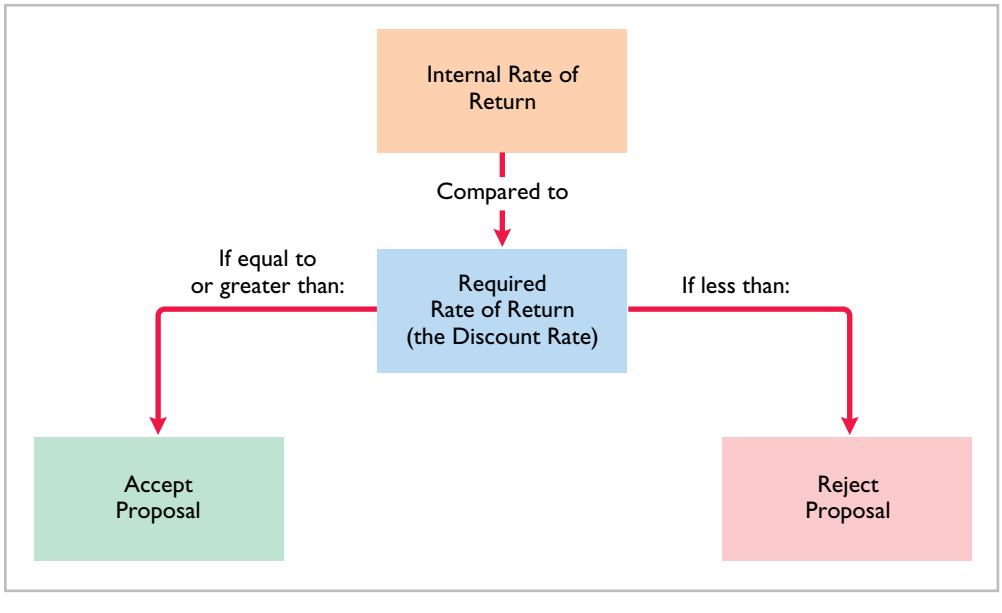


**ILLUSTRATION 27.23**
**Internal rate of return decision criteria**

## Comparing Discounted Cash Flow Methods

Illustration 27.24 compares the two discounted cash flow methods—net present value and internal rate of return. When properly used, either method will provide management with relevant quantitative data for making capital budgeting decisions.

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**ILLUSTRATION 27.24**
**Comparison of discounted cash flow methods**

| | Net Present Value | Internal Rate of Return |
|---|---|---|
| 1. Objective | Compute net present value (a dollar amount). | Compute internal rate of return (a percentage). |
| 2. Decision Rule | If net present value is zero or positive, accept the proposal. If net present value is negative, reject the proposal. | If internal rate of return is equal to or greater than the required rate of return, accept the proposal. If internal rate of return is less than the required rate of return, reject the proposal. |

### DO IT! 4 | Internal Rate of Return

Watertown Paper Corporation is considering adding another machine for the manufacture of corrugated cardboard. The machine would cost $900,000. It would have an estimated life of 6 years and no salvage value. The company estimates that annual cash inflows would increase by $400,000 and that annual cash outflows would increase by $190,000. Management has a required rate of return of 9%. Calculate the internal rate of return on this project and discuss whether it should be accepted.

**ACTION PLAN**

- Estimated annual cash inflows − Estimated annual cash outflows = Net annual cash flow.
- Capital investment/Net annual cash flows = Internal rate of return factor.
- Look up the factor in the present value of an annuity table to find the internal rate of return.
- Accept the project if the internal rate of return is equal to or greater than the required rate of return.

**Solution**

| | |
|---|---|
| Estimated annual cash inflows | $400,000 |
| Estimated annual cash outflows | 190,000 |
| Net annual cash flow | $210,000 |

$900,000/$210,000 = 4.285714. Using Table 4 of Appendix G and the factors that correspond with the six-payment row, 4.285714 is between the factors for 10% and 11%. Since the project has an internal rate that is greater than 10% and the required rate of return is only 9%, the project should be accepted.

Related exercise material: **BE27.7, BE27.8, DO IT! 27.4, E27.5, E27.6, and E27.7.**

# Annual Rate of Return

**LEARNING OBJECTIVE 5**
Use the annual rate of return method.

The final capital budgeting technique we will look at is the **annual rate of return method**. It is based directly on accrual accounting data rather than on cash flows. It indicates **the profitability of a capital expenditure** by dividing expected annual net income by the average investment. Illustration 27.25 shows the formula for computing annual rate of return.

**ILLUSTRATION 27.25**
**Annual rate of return formula**

| Expected Annual Net Income | ÷ | Average Investment | = | Annual Rate of Return |
|---|---|---|---|---|

Assume that Reno Company is considering an investment of $130,000 in new equipment. The new equipment is expected to last five years and have zero salvage value at the end of its

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useful life. Reno uses the straight-line method of depreciation for accounting purposes. **Illustration 27.26** shows the expected annual revenues and costs of the new product that will be produced from the investment.

| | | |
|---|---|---|
| Sales | | $200,000 |
| Less: Costs and expenses | | |
| Manufacturing costs (exclusive of depreciation) | $132,000 | |
| Depreciation expense ($130,000 ÷ 5) | 26,000 | |
| Selling and administrative expenses | 22,000 | 180,000 |
| Income before income taxes | | 20,000 |
| Income tax expense | | 7,000 |
| Net income | | $ 13,000 |

**ILLUSTRATION 27.26**
**Estimated annual net income from Reno Company's capital expenditure**

Reno's expected annual net income is $13,000. Average investment is derived from the formula shown in **Illustration 27.27**.

$$\frac{\text{Original Investment} + \text{Value at End of Useful Life}}{2} = \text{Average Investment}$$

**ILLUSTRATION 27.27**
**Formula for computing average investment**

The value at the end of useful life is equal to the asset's salvage value, if any. For Reno, average investment is $65,000 [($130,000 + $0) ÷ 2]. The expected annual rate of return for Reno's investment in new equipment is therefore 20%, computed as follows.

$$\$13{,}000 \div \$65{,}000 = 20\%$$

Management then compares the annual rate of return with its **required rate of return** for investments of similar risk. The required rate of return is generally based on the company's cost of capital. The decision rule is: **A project is acceptable if its rate of return is greater than management's required rate of return. It is unacceptable when the reverse is true.** When companies use the rate of return technique in deciding among several acceptable projects, **the higher the rate of return for a given risk, the more attractive the investment**.

The principal advantages of this method are the simplicity of its calculation and management's familiarity with the accounting terms used in the computation. A major limitation of the annual rate of return method is that it does not consider the time value of money. For example, no consideration is given as to whether cash inflows will occur early or late in the life of the investment. As explained in Appendix G, recognition of the time value of money can make a significant difference between the future value and the discounted present value of an investment. A second disadvantage is that this method relies on accrual accounting numbers rather than expected cash flows (see **Helpful Hint**).

**HELPFUL HINT**
A capital budgeting decision based on only one technique may be misleading. It is often wise to analyze an investment from a number of different perspectives.

## DO IT! 5 | Annual Rate of Return

Watertown Paper Corporation is considering adding another machine for the manufacture of corrugated cardboard. The machine would cost $900,000. It would have an estimated life of 6 years and no salvage value. The company estimates that annual revenues would increase by $400,000 and that annual expenses excluding depreciation would increase by $190,000. It uses the straight-line method to compute depreciation expense. Management has a required rate of return of 9%. Compute the annual rate of return.

**ACTION PLAN**
- Expected annual net income = Annual revenues − Annual expenses (including depreciation expense).
- Average investment = (Original investment + Value at end of useful life)/2.

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**Solution**

| | | |
|---|---|---|
| Revenues | | $400,000 |
| Less: | | |
| Expenses (excluding depreciation) | $190,000 | |
| Depreciation ($900,000/6 years) | 150,000 | 340,000 |
| Annual net income | | $ 60,000 |

Average investment = ($900,000 + $0)/2 = $450,000.
Annual rate of return = $60,000/$450,000 = 13.3%.

Since the annual rate of return (13.3%) is greater than Watertown's required rate of return (9%), the proposed project is acceptable.

Related exercise material: **BE27.9, DO IT! 27.5, E27.8, E27.9, E27.10, and E27.11.**

**ACTION PLAN (*cont.*)**

- **Annual rate of return = Expected annual net income/Average investment.**

# Review and Practice

## Learning Objectives Review

### 1 Describe capital budgeting inputs and apply the cash payback technique.

Management gathers project proposals from each department; a capital budget committee screens the proposals and recommends worthy projects. Company officers decide which projects to fund, and the board of directors approves the capital budget. In capital budgeting, estimated cash inflows and outflows, rather than accrual-accounting numbers, are the preferred inputs.

The cash payback technique identifies the time period required to recover the cost of the investment. The formula when net annual cash flows are equal is: Cost of capital investment ÷ Estimated net annual cash flow = Cash payback period. The shorter the payback period, the more attractive the investment.

### 2 Use the net present value method.

The net present value method compares the present value of future cash inflows with the capital investment to determine net present value. The NPV decision rule is: Accept the project if net present value is zero or positive. Reject the project if net present value is negative.

### 3 Identify capital budgeting challenges and refinements.

Intangible benefits are difficult to quantify and thus are often ignored in capital budgeting decisions. This can result in incorrectly rejecting some projects. One method for considering intangible benefits is to calculate the NPV, ignoring intangible benefits. If the resulting NPV is below zero, evaluate whether the benefits are worth at least the amount of the negative net present value. Alternatively, intangible benefits can be incorporated into the NPV calculation, using conservative estimates of their value.

The profitability index is a tool for comparing the relative merits of alternative capital investment opportunities. It is computed as Present value of net cash flows ÷ Initial investment. The higher the index, the more desirable the project.

A post-audit is an evaluation of a capital investment's actual performance. Post-audits create an incentive for managers to make accurate estimates. Post-audits also are useful for determining whether a company should continue, expand, or terminate a project. Finally, post-audits provide feedback that is useful for improving estimation techniques.

### 4 Use the internal rate of return method.

The objective of the internal rate of return method is to find the interest yield of the potential investment, which is expressed as a percentage rate. The IRR decision rule is: Accept the project when the internal rate of return is equal to or greater than the required rate of return. Reject the project when the internal rate of return is less than the required rate of return.

### 5 Use the annual rate of return method.

The annual rate of return uses accrual accounting data to indicate the profitability of a capital investment. It is calculated as Expected annual net income ÷ Amount of the average investment. The higher the rate of return, the more attractive the investment.

## Glossary Review

**Annual rate of return method** The determination of the profitability of a capital expenditure, computed by dividing expected annual net income by the average investment. (p. 27-18).

**Capital budgeting** The process of making capital expenditure decisions in business. (p. 27-1).

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**Cash payback technique** A capital budgeting technique that identifies the time period required to recover the cost of a capital investment from the net annual cash flow produced by the investment. (p. 27-4).

**Cost of capital** The weighted-average rate of return that the firm must pay to obtain funds from creditors and stockholders. (p. 27-9).

**Discounted cash flow technique** A capital budgeting technique that considers both the estimated net cash flows from the investment and the time value of money. (p. 27-6).

**Discount rate** The interest rate used in discounting the future net cash flows to determine present value. (p. 27-6).

**Internal rate of return (IRR)** The interest rate that will cause the present value of the proposed capital expenditure to equal the present value of the expected net annual cash flows. (p. 27-16).

**Internal rate of return (IRR) method** A method used in capital budgeting that results in finding the interest yield of the potential investment. (p. 27-16).

**Net present value (NPV)** The difference that results when the original capital outlay is subtracted from the discounted net cash flows. (p. 27-6).

**Net present value (NPV) method** A method used in capital budgeting in which net cash flows are discounted to their present value and then compared to the capital outlay required by the investment. (p. 27-6).

**Post-audit** A thorough evaluation of how well a project's actual performance matches the original projections. (p. 27-15).

**Profitability index** A method of comparing alternative projects that takes into account both the size of the investment and its discounted net cash flows. It is computed by dividing the present value of net cash flows by the initial investment. (p. 27-14).

**Required rate of return** Management's minimum acceptable rate of return on investments, sometimes called the discount rate or cost of capital. (p. 27-6).

**Sensitivity analysis** An approach that uses a number of outcome estimates to get a sense of the variability among potential returns. (p. 27-14).

## Practice Multiple-Choice Questions

**1. (LO 1)** Which of the following is **not** an example of a capital budgeting decision?

- **a.** Decision to build a new plant.
- **b.** Decision to renovate an existing facility.
- **c.** Decision to buy a piece of machinery.
- **d.** All of these are capital budgeting decisions.

**2. (LO 1)** What is the order of involvement of the following parties in the capital budgeting authorization process?

- **a.** Plant managers, officers, capital budget committee, board of directors.
- **b.** Board of directors, plant managers, officers, capital budget committee.
- **c.** Plant managers, capital budget committee, officers, board of directors.
- **d.** Officers, plant managers, capital budget committee, board of directors.

**3. (LO 1)** What is a weakness of the cash payback approach?

- **a.** It uses accrual-based accounting numbers.
- **b.** It ignores the time value of money.
- **c.** It ignores the useful life of alternative projects.
- **d.** Both (b) and (c) are true.

**4. (LO 1)** Siegel Industries is considering two capital budgeting projects. Project A requires an initial investment of $48,000. It is expected to produce net annual cash flows of $7,000. Project B requires an initial investment of $75,000 and is expected to produce net annual cash flows of $12,000. Using the cash payback technique to evaluate the two projects, Siegel should accept:

- **a.** Project A because it has a shorter cash payback period.
- **b.** Project B because it has a shorter cash payback period.
- **c.** Project A because it requires a smaller initial investment.
- **d.** Project B because it produces a larger net annual cash flow.

**5. (LO 2)** Which is a **true** statement regarding using a higher discount rate to calculate the net present value of a project?

- **a.** It will make it less likely that the project will be accepted.
- **b.** It will make it more likely that the project will be accepted.
- **c.** It is appropriate to use a higher rate if the project is perceived as being less risky than other projects being considered.
- **d.** It is appropriate to use a higher rate if the project will have a short useful life relative to other projects being considered.

**6. (LO 2)** A positive net present value means that the:

- **a.** project's rate of return is less than the cutoff rate.
- **b.** project's rate of return exceeds the required rate of return.
- **c.** project's rate of return equals the required rate of return.
- **d.** project is unacceptable.

**7. (LO 2)** Which of the following is **not** an alternative name for the discount rate?

- **a.** Hurdle rate.
- **b.** Required rate of return.
- **c.** Cutoff rate.
- **d.** All of these are alternative names for the discount rate.

**8. (LO 3)** If a project has intangible benefits whose value is hard to estimate, the best thing to do is:

- **a.** ignore these benefits, since any estimate of their value will most likely be wrong.
- **b.** include a conservative estimate of their value.
- **c.** ignore their value in your initial net present value calculation, but then estimate whether their potential value is worth at least the amount of the net present value deficiency.
- **d.** Either (b) or (c) is correct.

**9. (LO 3)** An example of an intangible benefit provided by a capital budgeting project is:

- **a.** the salvage value of the capital investment.
- **b.** a positive net present value.
- **c.** a decrease in customer complaints regarding poor quality.
- **d.** an internal rate of return greater than zero.

**10. (LO 3)** The following information is available for a potential capital investment.

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| | |
|---|---|
| Initial investment | $80,000 |
| Salvage value | 10,000 |
| Net annual cash flow | 14,820 |
| Present value of net annual cash flows | 98,112 |
| Net present value | 18,112 |
| Useful life | 10 years |

The potential investment's profitability index (rounded to two decimals) is:

**a.** 5.40. **c.** 1.23.

**b.** 1.19. **d.** 1.40.

**11.** **(LO 3)** A post-audit of an investment project should be performed:

**a.** on all significant capital expenditure projects.

**b.** on all projects that management feels might be financial failures.

**c.** on randomly selected projects.

**d.** only on projects that enjoy tremendous success.

**12.** **(LO 4)** A project should be accepted if its internal rate of return exceeds:

**a.** zero.

**b.** the rate of return on a government bond.

**c.** the company's required rate of return.

**d.** the rate the company pays on borrowed funds.

**13.** **(LO 4)** The following information is available for a potential capital investment.

| | |
|---|---|
| Initial investment | $60,000 |
| Net annual cash flow | 15,400 |
| Net present value | 3,143 |
| Useful life | 5 years |

The potential investment's internal rate of return is approximately:

**a.** 5%. **c.** 4%.

**b.** 10%. **d.** 9%.

**14.** **(LO 5)** Which of the following is **incorrect** about the annual rate of return technique?

**a.** The calculation is simple.

**b.** The accounting terms used are familiar to management.

**c.** The timing of the cash inflows is not considered.

**d.** The time value of money is considered.

**15.** **(LO 5)** The following information is available for a potential capital investment.

| | |
|---|---|
| Initial investment | $120,000 |
| Annual net income | 15,000 |
| Net annual cash flow | 27,500 |
| Salvage value | 20,000 |
| Useful life | 8 years |

The potential investment's annual rate of return is approximately:

**a.** 21%. **c.** 30%.

**b.** 15%. **d.** 39%.

## Solutions

**1.** **d.** Choices (a), (b), and (c) are all examples of capital budgeting decisions, so choice (d) is the best answer.

**2.** **c.** The process of authorizing capital budget expenditures starts with plant managers, moves on to the capital budgeting committee, goes next to the officers of the firm and finally is acted upon by the board of directors. The other choices are therefore incorrect.

**3.** **d.** Choices (b) and (c) are both correct; therefore, choice (d) is the best answer. Choice (a) is incorrect as the use of accrual-based accounting numbers is not a weakness of the cash payback approach.

**4.** **b.** Project B ($75,000 ÷ $12,000) has a shorter cash payback period than Project A ($48,000 ÷ $7,000). The other choices are therefore incorrect.

**5.** **a.** If a higher discount rate is used in calculating the net present value of a project, the resulting net present value will be lower and the project will be less likely to be accepted. The other choices are therefore incorrect.

**6.** **b.** A positive net present value means that the project's rate of return exceeds the required rate of return. The other choices are therefore incorrect.

**7.** **d.** Choices (a), (b), and (c) are all alternative names for the discount rate; therefore, choice (d) is the best answer.

**8.** **d.** Choices (b) and (c) are both reasonable approaches to including intangible benefits in the capital budgeting process; therefore, choice (d) is the best answer. Choice (a) is incorrect because even though these intangible benefits may be hard to quantify, they should not be ignored in the capital budgeting process.

**9.** **c.** A decrease in customer complaints regarding poor quality is one example of an intangible benefit provided by a capital budgeting project. The other choices are incorrect because (a) salvage value, (b) net present value, and (d) internal rate of return are all quantitative measures, i.e., tangible.

**10.** **c.** ($18,112 + $80,000) ÷ $80,000 = 1.23, not (a) 5.40, (b) 1.19, or (d) 1.40.

**11.** **a.** A post-audit should be performed on all significant capital expenditure projects, not just on (b) financial failures, (c) randomly selected projects, or (d) tremendous successes, because the feedback gained will help to improve the process in the future and also will give managers an incentive to be more realistic in preparing capital expenditure proposals.

**12.** **c.** A project should be accepted if its internal rate of return exceeds the company's required rate of return, not (a) zero, (b) the rate of return on a government bond, or (d) the rate the company pays on borrowed funds.

**13.** **d.** ($60,000 ÷ $15,400) equals 3.8961, which corresponds with approximately 9% in Table 4 of Appendix G, not (a) 5%, (b) 10%, or (c) 4%.

**14.** **d.** The time value of money is not considered when applying the annual rate of return method. The other choices are correct statements.

**15.** **a.** $15,000 ÷ [($120,000 + $20,000) ÷ 2] = 21%, not (b) 15%, (c) 30%, or (d) 39%.

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## Practice Brief Exercises

**1. (LO 1)** Carson Company is considering purchasing new equipment for $600,000. Annual depreciation over the 8-year useful life of the equipment is $75,000. It is expected that the equipment will produce net annual cash inflows of $100,000 over its 8-year useful life. Compute the cash payback period.

*Compute the cash payback period for a capital investment.*

### Solution

**1.** Cash payback period = $600,000/$100,000 = 6 years

**2. (LO 2)** Hilred Company is considering two different, mutually exclusive capital expenditure proposals. Project A will cost $400,000, has an expected useful life of 8 years, a salvage value of zero, and is expected to increase net annual cash flows by $80,000. Project B will also cost $400,000, has an expected useful life of 8 years, a salvage value of $100,000, and is expected to increase net annual cash flows by $70,000. A discount rate of 10% is appropriate for both projects. Compute the net present value of each project. Which project should be accepted?

*Compute net present values.*

### Solution

**2.**

**Project A**

| | Cash Flows | × | 10% Discount Factor | = | Present Value |
|---|---|---|---|---|---|
| Present value of net annual cash flows | $ 80,000 | × | 5.33493 | = | $426,794 |
| Present value of salvage value | 0 | × | .46651 | = | 0 |
| | | | | | 426,794 |
| Less: Capital investment | | | | | 400,000 |
| Net present value | | | | | $ 26,794 |

**Project B**

| | Cash Flows | × | 10% Discount Factor | = | Present Value |
|---|---|---|---|---|---|
| Present value of net annual cash flows | $ 70,000 | × | 5.33493 | = | $373,445 |
| Present value of salvage value | 100,000 | × | .46651 | = | 46,651 |
| | | | | | 420,096 |
| Less: Capital investment | | | | | 400,000 |
| Net present value | | | | | $ 20,096 |

Project A has a higher net present value than Project B, and it should therefore be accepted.

**3. (LO 5)** King-Roken Company is considering investing in new automated equipment. It is expected that the equipment will increase annual revenues by $200,000 and annual expenses by $120,000 (including depreciation). The equipment will cost $540,000 and have a $20,000 salvage value at the end of its 10-year useful life. Calculate the annual rate of return.

*Calculate annual rate of return.*

### Solution

**3.** The annual rate of return is calculated by dividing expected annual income by the average investment. The company's expected annual income is:

$$\$200,000 - \$120,000 = \$80,000$$

Its average investment is:

$$\frac{\$540,000 + \$20,000}{2} = \$280,000$$

Therefore, its annual rate of return is:

$$\$80,000/\$280,000 = 28.6\%$$

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## Practice Exercises

*Calculate payback period, internal rate of return, and apply decision rules.*

**1. (LO 1, 4)** BTMS Inc. wants to purchase a new machine for $30,000. Installation costs are $1,500. The old machine was bought five years ago and had an expected economic life of 10 years without salvage value. This old machine now has a book value of $2,000, and BTMS Inc. expects to sell it for that amount. The new machine would decrease operating costs by $8,000 each year of its economic life. The straight-line depreciation method would be used for the new machine, for a five-year period with no salvage value.

### Instructions

**a.** Determine the cash payback period.

**b.** Determine the approximate internal rate of return.

**c.** Assuming the company has a required rate of return of 10%, state your conclusion on whether the new machine should be purchased.

(CGA adapted)

### Solution

**1. a.** Total net investment = $30,000 + $1,500 − $2,000 = $29,500
Annual net cash flow = $8,000
Payback period = $29,500 ÷ $8,000 = 3.7 years

**b.** Net present value approximates zero when discount rate is 11%.

| Item | Amount | Years | PV Factor | Present Value |
|---|---|---|---|---|
| Net annual cash flows | $8,000 | 1–5 | 3.69590 | $29,567 |
| Less: Capital investment | | | | 29,500 |
| Net present value | | | | $ 67 |

**c.** Because the approximate internal rate of return of 11% exceeds the required rate of return of 10%, the investment should be accepted.

*Calculate payback, annual rate of return, and net present value*

**2. (LO 1, 2, 5)** MCA Corporation is reviewing an investment proposal. The initial cost is $105,000. Estimates of the book value of the investment at the end of each year, the net cash flows for each year, and the net income for each year are presented in the schedule below. All cash flows are assumed to lake place at the end of the year. The salvage value of the investment at the end of each year is equal to its book value. There would be no salvage value at the end of the investment's life.

| Investment Proposal | | | |
|---|---|---|---|
| Year | Book Value | Annual Cash Flows | Annual Net Income |
| 1 | $70,000 | $45,000 | $16,000 |
| 2 | 42,000 | 40,000 | 18,000 |
| 3 | 21,000 | 35,000 | 20,000 |
| 4 | 7,000 | 30,000 | 22,000 |
| 5 | 0 | 25,000 | 24,000 |

MCA Corporation uses a 15% target rate of return for new investment proposals.

### Instructions

**a.** What is the cash payback period for this proposal?

**b.** What is the annual rate of return for the investment?

**c.** What is the net present value of the investment?

(CMA-Canada adapted)

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### Solution

**2. a.**

| | Year | Amount | Balance |
|---|---|---|---|
| Initial investment | 0 | $(105,000) | $(105,000) |
| Less: Cash flow | 1 | 45,000 | (60,000) |
| | 2 | 40,000 | (20,000) |
| | 3 | 35,000 | 15,000 |

Payback period = 2 + ($20,000 ÷ $35,000) = 2.57 years

**b.** Average annual net income = ($16,000 + $18,000 + $20,000 + $22,000 + $24,000) ÷ 5 = $20,000
Average investment = ($105,000 + $0) ÷ 2 = $52,500
Annual rate of return = $20,000 ÷ $52,500 = 38.10%

**c.**

| | Year | Discount Factor, 15% | Amount | Present Value |
|---|---|---|---|---|
| Net cash flows | 1 | 0.86957 | $45,000 | $ 39,131 |
| | 2 | 0.75614 | 40,000 | 30,246 |
| | 3 | 0.65752 | 35,000 | 23,013 |
| | 4 | 0.57175 | 30,000 | 17,153 |
| | 5 | 0.49718 | 25,000 | 12,430 |
| Present value of cash inflows | | | | 121,973 |
| Less: Initial investment | | | | 105,000 |
| Net present value | | | | $ 16,973 |

## Practice Problem

*Compute annual rate of return, cash payback, and net present value.*

**(LO 1, 2, 5)** Cornfield Company is considering a long-term capital investment project in laser equipment. This will require an investment of $280,000, and it will have a useful life of 5 years. Annual net income is expected to be $16,000 a year. Depreciation is computed by the straight-line method with no salvage value. The company's cost of capital is 10%, and it desires a cash payback of 60% of a project's useful life or less. (*Hint:* Assume cash flows can be computed by adding back depreciation expense.)

### Instructions

(Round all computations to two decimal places unless directed otherwise.)

**a.** Compute the cash payback period for the project.

**b.** Compute the net present value for the project. (Round to nearest dollar.)

**c.** Compute the annual rate of return for the project.

**d.** Should the project be accepted? Why?

### Solution

**a.** $280,000 ÷ $72,000 ($16,000 + $56,000) = 3.89 years

**b.**

| | Present Value at 10% |
|---|---|
| Discount factor for 5 payments | 3.79079 |
| Present value of net cash flows: $72,000 × 3.79079 | $272,937 |
| Less: Capital investment | 280,000 |
| Negative net present value | $ (7,063) |

**c.** $16,000 ÷ $140,000 ($280,000 ÷ 2) = 11.4%

**d.** The annual rate of return of 11.4% is reasonable. However, the cash payback period is 78% of the project's useful life, and net present value is negative. The recommendation is to reject the project.

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## WileyPLUS

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## Questions

**1.** Describe the process a company may use in screening and approving the capital expenditure budget.

**2.** What are the advantages and disadvantages of the cash payback technique?

**3.** Tom Wells claims the formula for the cash payback technique is the same as the formula for the annual rate of return technique. Is Tom correct? What is the formula for the cash payback technique?

**4.** Two types of present value tables may be used with the discounted cash flow techniques. Identify the tables and the circumstance(s) when each table should be used.

**5.** What is the decision rule under the net present value method?

**6.** Discuss the factors that determine the appropriate discount rate to use when calculating the net present value.

**7.** What simplifying assumptions were made in the chapter regarding the calculation of net present value?

**8.** What are some examples of potential intangible benefits of investment proposals? Why do these intangible benefits complicate the capital budgeting evaluation process? What might happen if intangible benefits are ignored in a capital budgeting decision?

**9.** What steps can be taken to incorporate intangible benefits into the capital budget evaluation process?

**10.** What advantages does the profitability index provide over direct comparison of net present value when comparing two projects?

**11.** What is a post-audit? What are the potential benefits of a post-audit?

**12.** Identify the steps required in using the internal rate of return method when the net annual cash flows are equal.

**13.** El Cajon Company uses the internal rate of return method. What is the decision rule for this method?

**14.** What are the strengths of the annual rate of return approach? What are its weaknesses?

**15.** Your classmate, Mike Dawson, is confused about the factors that are included in the annual rate of return technique. What is the formula for this technique?

**16.** Sveta Pace is trying to understand the term "cost of capital." Define the term and indicate its relevance to the decision rule under the internal rate of return technique.

## Brief Exercises

*Compute the cash payback period for a capital investment.*

**BE27.1 (LO 1)** Rihanna Company is considering purchasing new equipment for $450,000. It is expected that the equipment will produce net annual cash flows of $60,000 over its 10-year useful life. Annual depreciation will be $45,000. Compute the cash payback period.

*Compute net present value of an investment.*

**BE27.2 (LO 2)** Hsung Company accumulates the following data concerning a proposed capital investment: cash cost $215,000, net annual cash flows $40,000, and present value factor of cash inflows for 10 years is 5.65 (rounded). Determine the net present value, and indicate whether the investment should be made.

*Compute net present value of an investment.*

**BE27.3 (LO 2)** Thunder Corporation, an amusement park, is considering a capital investment in a new exhibit. The exhibit would cost $136,000 and have an estimated useful life of 5 years. It can be sold for $60,000 at the end of that time. (Amusement parks need to rotate exhibits to keep people interested.) It is expected to increase net annual cash flows by $25,000. The company's borrowing rate is 8%. Its cost of capital is 10%. Calculate the net present value of this project to the company.

*Compute net present value of an investment and consider intangible benefits.*

**BE27.4 (LO 2, 3)** Caine Bottling Corporation is considering the purchase of a new bottling machine. The machine would cost $200,000 and has an estimated useful life of 8 years with zero salvage value. Management estimates that the new bottling machine will provide net annual cash flows of $34,000. Management also believes that the new bottling machine will save the company money because it is expected to be more reliable than other machines, and thus will reduce downtime. How much would the reduction in downtime have to be worth in order for the project to be acceptable? Assume a discount rate of 9%. (*Hint:* Calculate the net present value.)

*Compute net present value and profitability index.*

**BE27.5 (LO 2, 3)** McKnight Company is considering two different, mutually exclusive capital expenditure proposals. Project A will cost $400,000, has an expected useful life of 10 years, a salvage value of zero, and is expected to increase net annual cash flows by $70,000. Project B will cost $310,000, has an

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expected useful life of 10 years, a salvage value of zero, and is expected to increase net annual cash flows by $55,000. A discount rate of 9% is appropriate for both projects. Compute the net present value and profitability index of each project. Which project should be accepted?

**BE27.6 (LO 3)** Quillen Company is performing a post-audit of a project completed one year ago. The initial estimates were that the project would cost $250,000, would have a useful life of 9 years, zero salvage value, and would result in net annual cash flows of $46,000 per year. Now that the investment has been in operation for 1 year, revised figures indicate that it actually cost $260,000, will have a total useful life of 11 years (including the year just completed), and will produce net annual cash flows of $39,000 per year. Evaluate the success of the project. Assume a discount rate of 10%. *Perform a post-audit.*

**BE27.7 (LO 4)** Kanye Company is evaluating the purchase of a rebuilt spot-welding machine to be used in the manufacture of a new product. The machine will cost $176,000, has an estimated useful life of 7 years, a salvage value of zero, and will increase net annual cash flows by $35,000. What is its approximate internal rate of return? *Calculate internal rate of return.*

**BE27.8 (LO 4)** Viera Corporation is considering investing in a new facility. The estimated cost of the facility is $2,045,000. It will be used for 12 years, then sold for $716,000. The facility will generate annual cash inflows of $400,000 and will need new annual cash outflows of $150,000. The company has a required rate of return of 7%. Calculate the internal rate of return on this project, and discuss whether the project should be accepted. *Calculate internal rate of return.*

**BE27.9 (LO 5)** Swift Oil Company is considering investing in a new oil well. It is expected that the oil well will increase annual revenues by $130,000 and will increase annual expenses by $70,000 including depreciation. The oil well will cost $490,000 and will have a $10,000 salvage value at the end of its 10-year useful life. Calculate the annual rate of return. *Compute annual rate of return.*

## DO IT! Exercises

**DO IT! 27.1 (LO 1)** Wayne Company is considering a long-term investment project called ZIP. ZIP will require an investment of $140,000. It will have a useful life of 4 years and no salvage value. Annual cash inflows would increase by $80,000, and annual cash outflows would increase by $40,000. Compute the cash payback period. *Compute the cash payback period for an investment.*

**DO IT! 27.2 (LO 2)** Wayne Company is considering a long-term investment project called ZIP. ZIP will require an investment of $120,000. It will have a useful life of 4 years and no salvage value. Annual cash inflows would increase by $80,000, and annual cash outflows would increase by $40,000. The company's required rate of return is 12%. Calculate the net present value on this project and discuss whether it should be accepted. *Calculate net present value of an investment.*

**DO IT! 27.3 (LO 3)** Ranger Corporation has decided to invest in renewable energy sources to meet part of its energy needs for production. It is considering solar power versus wind power. After considering cost savings as well as incremental revenues from selling excess electricity into the power grid, it has determined the following. *Compute profitability index.*

| | Solar | Wind |
|---|---|---|
| Present value of annual cash flows | $52,580 | $128,450 |
| Initial investment | $39,500 | $105,300 |

Determine the net present value and profitability index of each project. Which energy source should it choose?

**DO IT! 27.4 (LO 4)** Wayne Company is considering a long-term investment project called ZIP. ZIP will require an investment of $120,000. It will have a useful life of 4 years and no salvage value. Annual cash inflows would increase by $80,000, and annual cash outflows would increase by $40,000. The company's required rate of return is 12%. Calculate the internal rate of return on this project and discuss whether it should be accepted. *Calculate internal rate of return.*

**DO IT! 27.5 (LO 5)** Wayne Company is considering a long-term investment project called ZIP. ZIP will require an investment of $120,000. It will have a useful life of 4 years and no salvage value. Annual revenues would increase by $80,000, and annual expenses (excluding depreciation) would increase by $41,000. Wayne uses the straight-line method to compute depreciation expense. The company's required rate of return is 12%. Compute the annual rate of return. *Calculate annual rate of return.*

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## Exercises

*Compute cash payback and net present value.*

**E27.1 (LO 1, 2)** Linkin Corporation is considering purchasing a new delivery truck. The truck has many advantages over the company's current truck (not the least of which is that it runs). The new truck would cost $56,000. Because of the increased capacity, reduced maintenance costs, and increased fuel economy, the new truck is expected to generate cost savings of $8,000. At the end of 8 years, the company will sell the truck for an estimated $27,000. Traditionally the company has used a rule of thumb that a proposal should not be accepted unless it has a payback period that is less than 50% of the asset's estimated useful life. Larry Newton, a new manager, has suggested that the company should not rely solely on the payback approach, but should also employ the net present value method when evaluating new projects. The company's cost of capital is 8%.

### Instructions

**a.** Compute the cash payback period and net present value of the proposed investment.

**b.** Does the project meet the company's cash payback criteria? Does it meet the net present value criteria for acceptance? Discuss your results.

*Compute cash payback period and net present value.*

**E27.2 (LO 1, 2)** Doug's Custom Construction Company is considering three new projects, each requiring an equipment investment of $22,000. Each project will last for 3 years and produce the following net annual cash flows.

| Year | AA | BB | CC |
|---|---|---|---|
| 1 | $ 7,000 | $10,000 | $13,000 |
| 2 | 9,000 | 10,000 | 12,000 |
| 3 | 12,000 | 10,000 | 11,000 |
| Total | $28,000 | $30,000 | $36,000 |

The equipment's salvage value is zero, and Doug uses straight-line depreciation. Doug will not accept any project with a cash payback period over 2 years. Doug's required rate of return is 12%.

### Instructions

**a.** Compute each project's payback period, indicating the most desirable project and the least desirable project using this method. (Round to two decimals and assume in your computations that cash flows occur evenly throughout the year.)

**b.** Compute the net present value of each project. Does your evaluation change? (Round to nearest dollar.)

*Calculate net present value and apply decision rule.*

**E27.3 (LO 2)** Hillsong Inc. manufactures snowsuits. Hillsong is considering purchasing a new sewing machine at a cost of $2.45 million. Its existing machine was purchased five years ago at a price of $1.8 million; six months ago, Hillsong spent $55,000 to keep it operational. The existing sewing machine can be sold today for $250,000. The new sewing machine would require a one-time, $85,000 training cost. Operating costs would decrease by the following amounts for years 1 to 7:

| Year | |
|---|---|
| 1 | $390,000 |
| 2 | 400,000 |
| 3 | 411,000 |
| 4 | 426,000 |
| 5 | 434,000 |
| 6 | 435,000 |
| 7 | 436,000 |

The new sewing machine would be depreciated according to the declining-balance method at a rate of 20%. The salvage value is expected to be $400,000. This new equipment would require maintenance costs of $100,000 at the end of the fifth year. The cost of capital is 9%.

### Instructions

Use the net present value method to determine whether Hillsong should purchase the new machine to replace the existing machine, and state the reason for your conclusion.

(CGA adapted)

*Compute net present value and profitability index.*

**E27.4 (LO 2, 3)** BAK Corp. is considering purchasing one of two new diagnostic machines. Either machine would make it possible for the company to bid on jobs that it currently isn't equipped to do. Estimates regarding each machine are provided below.

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| | Machine A | Machine B |
|---|---|---|
| Original cost | $75,500 | $180,000 |
| Estimated life | 8 years | 8 years |
| Salvage value | –0– | –0– |
| Estimated annual cash inflows | $20,000 | $40,000 |
| Estimated annual cash outflows | $5,000 | $10,000 |

**Instructions**

Calculate the net present value and profitability index of each machine. Assume a 9% discount rate. Which machine should be purchased?

**E27.5 (LO 4)** Bruno Corporation is involved in the business of injection molding of plastics. It is considering the purchase of a new computer-aided design and manufacturing machine for $430,000. The company believes that with this new machine it will improve productivity and increase quality, resulting in an increase in net annual cash flows of $101,000 for the next 6 years. Management requires a 10% rate of return on all new investments.

*Determine internal rate of return.*

**Instructions**

Calculate the internal rate of return on this new machine. Should the investment be accepted?

**E27.6 (LO 1, 4)** BSU Inc. wants to purchase a new machine for $29,300, excluding $1,500 of installation costs. The old machine was purchased five years ago and had an expected economic life of 10 years with no salvage value. The old machine has a book value of $2,000, and BSU Inc. expects to sell it for that amount. The new machine will decrease operating costs by $7,000 each year of its economic life. The straight-line depreciation method will be used for the new machine for a six-year period with no salvage value.

*Calculate cash payback period, internal rate of return, and apply decision rules.*

**Instructions**

**a.** Determine the cash payback period.

**b.** Determine the approximate internal rate of return.

**c.** Assuming the company has a required rate of return of 10%, state your conclusion on whether the new machine should be purchased.

(CGA adapted)

**E27.7 (LO 4)** Iggy Company is considering three capital expenditure projects. Relevant data for the projects are as follows.

*Determine internal rate of return.*

| Project | Investment | Annual Income | Life of Project |
|---|---|---|---|
| 22A | $240,000 | $15,500 | 6 years |
| 23A | 270,000 | 20,600 | 9 years |
| 24A | 280,000 | 15,700 | 7 years |

Annual income is constant over the life of the project. Each project is expected to have zero salvage value at the end of the project. Iggy Company uses the straight-line method of depreciation.

**Instructions**

**a.** Determine the internal rate of return for each project. Round the internal rate of return factor to three decimals.

**b.** If Iggy Company's required rate of return is 10%, which projects are acceptable?

**E27.8 (LO 5)** Service Pierre's Hair Salon is considering opening a new location in French Lick, California. The cost of building a new salon is $300,000. A new salon will normally generate annual revenues of $70,000, with annual expenses (including depreciation) of $41,500. At the end of 15 years the salon will have a salvage value of $80,000.

*Calculate annual rate of return.*

**Instructions**

Calculate the annual rate of return on the project.

**E27.9 (LO 1, 5)** Service Legend Service Center just purchased an automobile hoist for $32,400. The hoist has an 8-year life and an estimated salvage value of $3,000. Installation costs and freight charges were $3,300 and $700, respectively. Legend uses straight-line depreciation.

*Compute cash payback period and annual rate of return.*

The new hoist will be used to replace mufflers and tires on automobiles. Legend estimates that the new hoist will enable his mechanics to replace five extra mufflers per week. Each muffler sells for $72 installed. The cost of a muffler is $36, and the labor cost to install a muffler is $16.

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**Instructions**

**a.** Compute the cash payback period for the new hoist.

**b.** Compute the annual rate of return for the new hoist. (Round to one decimal.)

*Compute annual rate of return, cash payback period, and net present value.*

**E27.10 (LO 1, 2, 5)** Vilas Company is considering a capital investment of $190,000 in additional productive facilities. The new machinery is expected to have a useful life of 5 years with no salvage value. Depreciation is by the straight-line method. During the life of the investment, annual net income and net annual cash flows are expected to be $12,000 and $50,000, respectively. Vilas has a 12% cost of capital rate, which is the required rate of return on the investment.

**Instructions**

(Round to two decimals.)

**a.** Compute (1) the cash payback period and (2) the annual rate of return on the proposed capital expenditure.

**b.** Using the discounted cash flow technique, compute the net present value.

*Calculate payback, annual rate of return, and net present value.*

**E27.11 (LO 1, 2, 5)** Drake Corporation is reviewing an investment proposal. The initial cost is $105,000. Estimates of the book value of the investment at the end of each year, the net cash flows for each year, and the net income for each year are presented in the schedule below. All cash flows are assumed to take place at the end of the year. The salvage value of the investment at the end of each year is assumed to equal its book value. There would be no salvage value at the end of the investment's life.

| | Investment Proposal | | |
|---|---|---|---|
| Year | Book Value | Annual Cash Flows | Annual Net Income |
| 1 | $70,000 | $45,000 | $10,000 |
| 2 | 42,000 | 40,000 | 12,000 |
| 3 | 21,000 | 35,000 | 14,000 |
| 4 | 7,000 | 30,000 | 16,000 |
| 5 | 0 | 25,000 | 18,000 |

Drake Corporation uses an 11% target rate of return for new investment proposals.

**Instructions**

**a.** What is the cash payback period for this proposal?

**b.** What is the annual rate of return for the investment?

**c.** What is the net present value of the investment?

(CMA-Canada adapted)

## Problems: Set A

*Compute annual rate of return, cash payback, and net present value.*

Excel

**P27.1A (LO 1, 2, 5)** U3 Company is considering three long-term capital investment proposals. Each investment has a useful life of 5 years. Relevant data on each project are as follows.

| | Project Bono | Project Edge | Project Clayton |
|---|---|---|---|
| Capital investment | $160,000 | $175,000 | $200,000 |
| Annual net income: | | | |
| Year 1 | 14,000 | 18,000 | 27,000 |
| 2 | 14,000 | 17,000 | 23,000 |
| 3 | 14,000 | 16,000 | 21,000 |
| 4 | 14,000 | 12,000 | 13,000 |
| 5 | 14,000 | 9,000 | 12,000 |
| Total | $ 70,000 | $ 72,000 | $ 96,000 |

Depreciation is computed by the straight-line method with no salvage value. The company's cost of capital is 15%. (Assume that cash flows occur evenly throughout the year.)

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**Instructions**

**a.** Compute the cash payback period for each project. (Round to two decimals.)

**b.** Compute the net present value for each project. (Round to nearest dollar.)

b. E $(7,312); C $2,163

**c.** Compute the annual rate of return for each project. (Round to two decimals.) (*Hint:* Use average annual net income in your computation.)

**d.** Rank the projects on each of the foregoing bases. Which project do you recommend?

**P27.2A (LO 1, 2, 5)** Service Writing Lon Timur is an accounting major at a midwestern state university located approximately 60 miles from a major city. Many of the students attending the university are from the metropolitan area and visit their homes regularly on the weekends. Lon, an entrepreneur at heart, realizes that few good commuting alternatives are available for students doing weekend travel. He believes that a weekend commuting service could be organized and run profitably from several suburban and downtown shopping mall locations. Lon has gathered the following investment information.

*Compute annual rate of return, cash payback, and net present value.*

1. Five used vans would cost a total of $75,000 to purchase and would have a 3-year useful life with negligible salvage value. Lon plans to use straight-line depreciation.
2. Ten drivers would have to be employed at a total payroll expense of $48,000.
3. Other annual out-of-pocket expenses associated with running the commuter service would include Gasoline $16,000, Maintenance $3,300, Repairs $4,000, Insurance $4,200, and Advertising $2,500.
4. Lon has visited several financial institutions to discuss funding. The best interest rate he has been able to negotiate is 15%. Use this rate for cost of capital.
5. Lon expects each van to make ten round trips weekly and carry an average of six students each trip. The service is expected to operate 30 weeks each year, and each student will be charged $12.00 for a round-trip ticket.

**Instructions**

**a.** Determine the annual (1) net income and (2) net annual cash flows for the commuter service.

a. (1) $5,000

**b.** Compute (1) the cash payback period and (2) the annual rate of return. (Round to two decimals.)

b. (1) 2.5 years

**c.** Compute the net present value of the commuter service. (Round to the nearest dollar.)

**d.** What should Lon conclude from these computations?

**P27.3A (LO 2, 3, 4)** Service Brooks Clinic is considering investing in new heart-monitoring equipment. It has two options. Option A would have an initial lower cost but would require a significant expenditure for rebuilding after 4 years. Option B would require no rebuilding expenditure, but its maintenance costs would be higher. Since the Option B machine is of initial higher quality, it is expected to have a salvage value at the end of its useful life. The following estimates were made of the cash flows. The company's cost of capital is 8%.

*Compute net present value, profitability index, and internal rate of return.*

| | Option A | Option B |
|---|---|---|
| Initial cost | $160,000 | $227,000 |
| Annual cash inflows | $71,000 | $80,000 |
| Annual cash outflows | $30,000 | $31,000 |
| Cost to rebuild (end of year 4) | $50,000 | $0 |
| Salvage value | $0 | $8,000 |
| Estimated useful life | 7 years | 7 years |

**Instructions**

**a.** Compute the (1) net present value, (2) profitability index, and (3) internal rate of return for each option. (*Hint:* To solve for internal rate of return, experiment with alternative discount rates to arrive at a net present value of zero.)

a. (1) NPV A $16,709
(3) IRR B 12%

**b.** Which option should be accepted?

**P27.4A (LO 2, 3)** Service Jane's Auto Care is considering the purchase of a new tow truck. The garage doesn't currently have a tow truck, and the $60,000 price tag for a new truck would represent a major expenditure. Jane Austen, owner of the garage, has compiled the estimates shown below in trying to determine whether the tow truck should be purchased.

*Compute net present value considering intangible benefits.*

Excel

| | |
|---|---|
| Initial cost | $60,000 |
| Estimated useful life | 8 years |
| Net annual cash flows from towing | $8,000 |
| Overhaul costs (end of year 4) | $6,000 |
| Salvage value | $12,000 |

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Jane's good friend, Rick Ryan, stopped by. He is trying to convince Jane that the tow truck will have other benefits that Jane hasn't even considered. First, he says, cars that need towing need to be fixed. Thus, when Jane tows them to her facility, her repair revenues will increase. Second, he notes that the tow truck could have a plow mounted on it, thus saving Jane the cost of plowing her parking lot. (Rick will give her a used plow blade for free if Jane will plow Rick's driveway.) Third, he notes that the truck will generate goodwill; people who are rescued by Jane's tow truck will feel grateful and might be more inclined to use her service station in the future or buy gas there. Fourth, the tow truck will have "Jane's Auto Care" on its doors, hood, and back tailgate—a form of free advertising wherever the tow truck goes. Rick estimates that, at a minimum, these benefits would be worth the following.

| | |
|---|---|
| Additional annual net cash flows from repair work | $3,000 |
| Annual savings from plowing | 750 |
| Additional annual net cash flows from customer "goodwill" | 1,000 |
| Additional annual net cash flows resulting from free advertising | 750 |

The company's cost of capital is 9%.

**Instructions**

a. NPV $(13,950)

**a.** Calculate the net present value, ignoring the additional benefits described by Rick. Should the tow truck be purchased?

b. NPV $16,491

**b.** Calculate the net present value, incorporating the additional benefits suggested by Rick. Should the tow truck be purchased?

**c.** Suppose Rick has been overly optimistic in his assessment of the value of the additional benefits. At a minimum, how much would the additional benefits have to be worth in order for the project to be accepted?

*Compute net present value and internal rate of return with sensitivity analysis.*

**P27.5A (LO 2, 3, 4)** Service Coolplay Corp. is thinking about opening a soccer camp in southern California. To start the camp, Coolplay would need to purchase land and build four soccer fields and a sleeping and dining facility to house 150 soccer players. Each year, the camp would be run for 8 sessions of 1 week each. The company would hire college soccer players as coaches. The camp attendees would be male and female soccer players ages 12–18. Property values in southern California have enjoyed a steady increase in value. It is expected that after using the facility for 20 years, Coolplay can sell the property for more than it was originally purchased for. The following amounts have been estimated.

| | |
|---|---|
| Cost of land | $300,000 |
| Cost to build soccer fields, dorm and dining facility | $600,000 |
| Annual cash inflows assuming 150 players and 8 weeks | $920,000 |
| Annual cash outflows | $840,000 |
| Estimated useful life | 20 years |
| Salvage value | $1,500,000 |
| Discount rate | 8% |

**Instructions**

a. NPV $207,277

**a.** Calculate the net present value of the project.

**b.** To gauge the sensitivity of the project to these estimates, assume that if only 125 players attend each week, annual cash inflows will be $805,000 and annual cash outflows will be $750,000. What is the net present value using these alternative estimates? Discuss your findings.

**c.** Assuming the original facts, what is the net present value if the project is actually riskier than first assumed and an 10% discount rate is more appropriate?

d. IRR 12%

**d.** Assume that during the first 5 years, the annual net cash flows each year were only $40,000. At the end of the fifth year, the company is running low on cash, so management decides to sell the property for $1,332,000. What was the actual internal rate of return on the project? Explain how this return was possible given that the camp did not appear to be successful.

## Continuing Cases

Excel

### Current Designs

**CD27** A company that manufactures recreational pedal boats has approached Mike Cichanowski to ask if he would be interested in using **Current Designs**' rotomold expertise and equipment to produce some of the pedal boat components. Mike is intrigued by the idea and thinks it would be an interesting way of complementing the present product line.

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One of Mike's hesitations about the proposal is that the pedal boats are a different shape than the kayaks that Current Designs produces. As a result, the company would need to buy an additional rotomold oven in order to produce the pedal boat components. This project clearly involves risks, and Mike wants to make sure that the returns justify the risks. In this case, since this is a new venture, Mike thinks that a 15% discount rate is appropriate to use to evaluate the project.

As an intern at Current Designs, Mike has asked you to prepare an initial evaluation of this proposal. To aid in your analysis, he has provided the following information and assumptions.

1. The new rotomold oven will have a cost of $256,000, a salvage value of $0, and an 8-year useful life. Straight-line depreciation will be used.
2. The projected revenues, costs, and results for each of the 8 years of this project are as follows.

| | | |
|---|---|---|
| Sales | | $220,000 |
| Less: | | |
| Manufacturing costs | $140,000 | |
| Depreciation | 32,000 | |
| Shipping and administrative costs | 22,000 | 194,000 |
| Income before income taxes | | 26,000 |
| Income tax expense | | 10,800 |
| Net income | | $ 15,200 |

**Instructions**

**a.** Compute the annual rate of return. (Round to two decimal places.)

**b.** Compute the payback period. (Round to two decimal places.)

**c.** Compute the net present value using a discount rate of 9%. (Round to nearest dollar.) Should the proposal be accepted using this discount rate?

**d.** Compute the net present value using a discount rate of 15%. (Round to nearest dollar.) Should the proposal be accepted using this discount rate?

### Waterways

(*Note:* This is a continuation of the Waterways case from Chapters 19–26.)

**WP27** Waterways Corporation puts much emphasis on cash flow when it plans for capital investments. The company chose its discount rate of 8% based on the rate of return it must pay its owners and creditors. Using that rate, Waterways then uses different methods to determine the best decisions for making capital outlays. Waterways is considering buying five new backhoes to replace the backhoes it now has. This problem asks you to evaluate that decision, using various capital budgeting techniques.

*Go to* **WileyPLUS** *for complete case details and instructions.*

## Comprehensive Cases

**CC27.1** For this case, revisit the Greetings Inc. company presented in earlier chapters. The company is now searching for new opportunities for growth. This case will provide you with the opportunity to evaluate a proposal based on initial estimates as well as conduct sensitivity analysis. It also requires evaluation of the underlying assumptions used in the analysis.

**CC27.2** Armstrong Helmet Company needs to determine the cost for a given product. For this case, you will have the opportunity to explore cost-volume-profit relationships and prepare a set of budgets.

*Go to* **WileyPLUS** *for details and instructions for both cases.*

## Expand Your Critical Thinking

### Decision-Making Across the Organization

**CT27.1** Luang Company is considering the purchase of a new machine. Its invoice price is $122,000, freight charges are estimated to be $3,000, and installation costs are expected to be $5,000. Salvage value of the new machine is expected to be zero after a useful life of 4 years. Existing equipment could be

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retained and used for an additional 4 years if the new machine is not purchased. At that time, the salvage value of the equipment would be zero. If the new machine is purchased now, the existing machine would be scrapped. Luang's accountant, Lisa Hsung, has accumulated the following data regarding annual sales and expenses with and without the new machine.

1. Without the new machine, Luang can sell 10,000 units of product annually at a per unit selling price of $100. If the new unit is purchased, the number of units produced and sold would increase by 25%, and the selling price would remain the same.
2. The new machine is faster than the old machine, and it is more efficient in its usage of materials. With the old machine the gross profit rate will be 28.5% of sales, whereas the rate will be 30% of sales with the new machine. (*Note*: These gross profit rates do not include depreciation on the machines. For purposes of determining net income, treat depreciation expense as a separate line item.)
3. Annual selling expenses are $160,000 with the current equipment. Because the new equipment would produce a greater number of units to be sold, annual selling expenses are expected to increase by 10% if it is purchased.
4. Annual administrative expenses are expected to be $100,000 with the old machine, and $112,000 with the new machine.
5. The current book value of the existing machine is $40,000. Luang uses straight-line depreciation.
6. Luang's management has a required rate of return of 15% on its investment and a cash payback period of no more than 3 years.

### Instructions

With the class divided into groups, answer the following. (Ignore income tax effects.)

**a.** Calculate the annual rate of return for the new machine. (Round to two decimals.)

**b.** Compute the cash payback period for the new machine. (Round to two decimals.)

**c.** Compute the net present value of the new machine. (Round to the nearest dollar.)

**d.** On the basis of the foregoing data, would you recommend that Luang buy the machine? Why?

## Managerial Analysis

**CT27.2** Hawke Skateboards is considering building a new plant. Bob Skerritt, the company's marketing manager, is an enthusiastic supporter of the new plant. Lucy Liu, the company's chief financial officer, is not so sure that the plant is a good idea. Currently, the company purchases its skateboards from foreign manufacturers. The following figures were estimated regarding the construction of a new plant.

| | | | |
|---|---|---|---|
| Cost of plant | $4,000,000 | Estimated useful life | 15 years |
| Annual cash inflows | 4,000,000 | Salvage value | $2,000,000 |
| Annual cash outflows | 3,540,000 | Discount rate | 11% |

Bob Skerritt believes that these figures understate the true potential value of the plant. He suggests that by manufacturing its own skateboards the company will benefit from a "buy American" patriotism that he believes is common among skateboarders. He also notes that the firm has had numerous quality problems with the skateboards manufactured by its suppliers. He suggests that the inconsistent quality has resulted in lost sales, increased warranty claims, and some costly lawsuits. Overall, he believes sales will be $200,000 higher than projected above, and that the savings from lower warranty costs and legal costs will be $60,000 per year. He also believes that the project is not as risky as assumed above, and that a 9% discount rate is more reasonable.

### Instructions

Answer each of the following.

**a.** Compute the net present value of the project based on the original projections.

**b.** Compute the net present value incorporating Bob's estimates of the value of the intangible benefits, but still using the 11% discount rate.

**c.** Compute the net present value using the original estimates, but employing the 9% discount rate that Bob suggests is more appropriate.

**d.** Comment on your findings.

## Real-World Focus

**CT27.3** **Tecumseh Products Company** has its headquarters in Tecumseh, Michigan. It describes itself as "a global multinational corporation producing mechanical and electrical components essential to

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industries creating end-products for health, comfort, and convenience." The following was excerpted from the management discussion and analysis section of a recent annual report.

**Tecumseh Products Company**
Management Discussion and Analysis

The company has invested approximately $50 million in a scroll compressor manufacturing facility in Tecumseh, Michigan. After experiencing setbacks in developing a commercially acceptable scroll compressor, the Company is currently testing a new generation of scroll product. The Company is unable to predict when, or if, it will offer a scroll compressor for commercial sale, but it does anticipate that reaching volume production will require a significant additional investment. Given such additional investment and current market conditions, management is currently reviewing its options with respect to scroll product improvement, cost reductions, joint ventures and alternative new products.

### Instructions

Discuss issues the company should consider and techniques the company should employ to determine whether to continue pursuing this project.

**CT27.4** **Campbell Soup Company** is an international provider of soup products. Management is very interested in continuing to grow the company in its core business, while "spinning off" those businesses that are not part of its core operation.

### Instructions

Go to the home page of Campbell Soup Company and access its current annual report. Review the financial statements and management's discussion and analysis, and answer the following questions.

**a.** What was the total amount of capital expenditures in the current year, and how does this amount compare with the previous year? In your response, note what year you are using.

**b.** What interest rate did the company pay on new borrowings in the current year?

**c.** Assume that this year's capital expenditures are expected to increase cash flows by $50 million. What is the expected internal rate of return (IRR) for these capital expenditures? (Assume a 10-year period for the cash flows.)

## Communication Activity

**CT27.5** Refer back to E27.9 to address the following.

### Instructions

Prepare a memo to Maria Fierro, your supervisor. Show your calculations from E27.9 (a) and (b). In one or two paragraphs, discuss important nonfinancial considerations. Make any assumptions you believe to be necessary. Make a recommendation based on your analysis.

## Ethics Case

**CT27.6** NuComp Company operates in a state where corporate taxes and workers' compensation insurance rates have recently doubled. NuComp's president has just assigned you the task of preparing an economic analysis and making a recommendation relative to moving the entire operation to Missouri. The president is slightly in favor of such a move because Missouri is his boyhood home and he also owns a fishing lodge there.

You have just completed building your dream house, moved in, and sodded the lawn. Your children are all doing well in school and sports and, along with your spouse, want no part of a move to Missouri. If the company does move, so will you because the town is a one-industry community and you and your spouse will have to move to have employment. Moving when everyone else does will cause you to take a big loss on the sale of your house. The same hardships will be suffered by your coworkers, and the town will be devastated.

In compiling the costs of moving versus not moving, you have latitude in the assumptions you make, the estimates you compute, and the discount rates and time periods you project. You are in a position to influence the decision singlehandedly.

### Instructions

**a.** Who are the stakeholders in this situation?

**b.** What are the ethical issues in this situation?

**c.** What would you do in this situation?

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## All About You

**CT27.7** Numerous articles have been written that identify early warning signs that you might be getting into trouble with your personal debt load. You can find many good articles on this topic on the Web.

### Instructions

Find an article that identifies early warning signs of personal debt trouble. Write a summary of the article and bring your summary and the article to class to share.

## Considering Your Costs and Benefits

**CT27.8** The March 31, 2011, edition of the *Wall Street Journal* includes an article by Russell Gold entitled "Solar Gains Traction—Thanks to Subsidies."

### Instructions

Read the article and then answer the following questions.

**a.** What was the total cost of the solar panels installed? What was the "out-of-pocket" cost to the couple?

**b.** Using the total annual electricity bill of $5,000 mentioned in the story, what is the cash payback of the project using the total cost? What is the cash payback based on the "out-of-pocket" cost?

**c.** Solar panel manufacturers estimate that solar panels can last up to 40 years with only minor maintenance costs. Assuming no maintenance costs, a 6% rate of interest, a more conservative 20-year life, and zero salvage value, what is the net present value of the project based on the total cost? What is the net present value of the project based on the "out-of-pocket" cost?

**d.** What was the wholesale price of panels per watt at the time the article was written? At what price per watt does the article say that subsidies will no longer be needed? Does this price appear to be achievable?

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# Specimen Financial Statements: Apple Inc.

Once each year, a corporation communicates to its stockholders and other interested parties by issuing a complete set of audited financial statements. The **annual report**, as this communication is called, summarizes the financial results of the company's operations for the year and its plans for the future. Many annual reports are attractive, multicolored, glossy public relations pieces, containing pictures of corporate officers and directors as well as photos and descriptions of new products and new buildings. Yet the basic function of every annual report is to report financial information, almost all of which is a product of the corporation's accounting system.

The content and organization of corporate annual reports have become fairly standardized. Excluding the public relations part of the report (pictures, products, etc.), the following are the traditional financial portions of the annual report:

- Financial Highlights
- Letter to the Stockholders
- Management's Discussion and Analysis
- Financial Statements
- Notes to the Financial Statements
- Management's Responsibility for Financial Reporting
- Management's Report on Internal Control over Financial Reporting
- Report of Independent Registered Public Accounting Firm
- Selected Financial Data

The official SEC filing of the annual report is called a **Form 10-K**, which often omits the public relations pieces found in most standard annual reports. On the following pages, we present **Apple Inc.**'s financial statements taken from the company's 2015 Form 10-K. The complete Form 10-K, including notes to the financial statements, is available at the company's website.

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## CONSOLIDATED STATEMENTS OF OPERATIONS

(In millions, except number of shares which are reflected in thousands and per share amounts)

| | Years ended | | |
|---|---|---|---|
| | September 26, 2015 | September 27, 2014 | September 28, 2013 |
| Net sales | $ 233,715 | $ 182,795 | $ 170,910 |
| Cost of sales | 140,089 | 112,258 | 106,606 |
| Gross margin | 93,626 | 70,537 | 64,304 |
| Operating expenses: | | | |
| Research and development | 8,067 | 6,041 | 4,475 |
| Selling, general and administrative | 14,329 | 11,993 | 10,830 |
| Total operating expenses | 22,396 | 18,034 | 15,305 |
| Operating income | 71,230 | 52,503 | 48,999 |
| Other income/(expense), net | 1,285 | 980 | 1,156 |
| Income before provision for income taxes | 72,515 | 53,483 | 50,155 |
| Provision for income taxes | 19,121 | 13,973 | 13,118 |
| Net income | $ 53,394 | $ 39,510 | $ 37,037 |
| | | | |
| Earnings per share: | | | |
| Basic | $ 9.28 | $ 6.49 | $ 5.72 |
| Diluted | $ 9.22 | $ 6.45 | $ 5.68 |
| | | | |
| Shares used in computing earnings per share: | | | |
| Basic | 5,753,421 | 6,085,572 | 6,477,320 |
| Diluted | 5,793,069 | 6,122,663 | 6,521,634 |
| | | | |
| Cash dividends declared per share | $ 1.98 | $ 1.82 | $ 1.64 |

See accompanying Notes to Consolidated Financial Statements.

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## CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(In millions)

| | Years ended | | |
|---|---|---|---|
| | September 26, 2015 | September 27, 2014 | September 28, 2013 |
| Net income | $ 53,394 | $ 39,510 | $ 37,037 |
| Other comprehensive income/(loss): | | | |
| Change in foreign currency translation, net of tax effects of $201, $50 and $35, respectively | (411) | (137) | (112) |
| Change in unrealized gains/losses on derivative instruments: | | | |
| Change in fair value of derivatives, net of tax benefit/(expense) of $(441), $(297) and $(351), respectively | 2,905 | 1,390 | 522 |
| Adjustment for net (gains)/losses realized and included in net income, net of tax expense/(benefit) of $630, $(36) and $255, respectively | (3,497) | 149 | (458) |
| Total change in unrealized gains/losses on derivative instruments, net of tax | (592) | 1,539 | 64 |
| Change in unrealized gains/losses on marketable securities: | | | |
| Change in fair value of marketable securities, net of tax benefit/(expense) of $264, $(153) and $458, respectively | (483) | 285 | (791) |
| Adjustment for net (gains)/losses realized and included in net income, net of tax expense/(benefit) of $(32), $71 and $82, respectively | 59 | (134) | (131) |
| Total change in unrealized gains/losses on marketable securities, net of tax | (424) | 151 | (922) |
| Total other comprehensive income/(loss) | (1,427) | 1,553 | (970) |
| Total comprehensive income | $ 51,967 | $ 41,063 | $ 36,067 |

See accompanying Notes to Consolidated Financial Statements.

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## CONSOLIDATED BALANCE SHEETS

(In millions, except number of shares which are reflected in thousands and par value)

| | September 26, 2015 | September 27, 2014 |
|---|---|---|
| **ASSETS:** | | |
| Current assets: | | |
| Cash and cash equivalents | $ 21,120 | $ 13,844 |
| Short-term marketable securities | 20,481 | 11,233 |
| Accounts receivable, less allowances of $82 and $86, respectively | 16,849 | 17,460 |
| Inventories | 2,349 | 2,111 |
| Deferred tax assets | 5,546 | 4,318 |
| Vendor non-trade receivables | 13,494 | 9,759 |
| Other current assets | 9,539 | 9,806 |
| Total current assets | 89,378 | 68,531 |
| Long-term marketable securities | 164,065 | 130,162 |
| Property, plant and equipment, net | 22,471 | 20,624 |
| Goodwill | 5,116 | 4,616 |
| Acquired intangible assets, net | 3,893 | 4,142 |
| Other assets | 5,556 | 3,764 |
| Total assets | $ 290,479 | $ 231,839 |
| **LIABILITIES AND SHAREHOLDERS' EQUITY:** | | |
| Current liabilities: | | |
| Accounts payable | $ 35,490 | $ 30,196 |
| Accrued expenses | 25,181 | 18,453 |
| Deferred revenue | 8,940 | 8,491 |
| Commercial paper | 8,499 | 6,308 |
| Current portion of long-term debt | 2,500 | 0 |
| Total current liabilities | 80,610 | 63,448 |
| Deferred revenue, non-current | 3,624 | 3,031 |
| Long-term debt | 53,463 | 28,987 |
| Other non-current liabilities | 33,427 | 24,826 |
| Total liabilities | 171,124 | 120,292 |
| Commitments and contingencies | | |
| Shareholders' equity: | | |
| Common stock and additional paid-in capital, $0.00001 par value: 12,600,000 shares authorized; 5,578,753 and 5,866,161 shares issued and outstanding, respectively | 27,416 | 23,313 |
| Retained earnings | 92,284 | 87,152 |
| Accumulated other comprehensive income | (345) | 1,082 |
| Total shareholders' equity | 119,355 | 111,547 |
| Total liabilities and shareholders' equity | $ 290,479 | $ 231,839 |

See accompanying Notes to Consolidated Financial Statements.

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## CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY

(In millions, except number of shares which are reflected in thousands)

| | Common Stock and Additional Paid-In Capital | | Retained Earnings | Accumulated Other Comprehensive Income/(Loss) | Total Shareholders' Equity |
|---|---|---|---|---|---|
| | Shares | Amount | | | |
| Balances as of September 29, 2012 | 6,574,458 | $ 16,422 | $ 101,289 | $ 499 | $ 118,210 |
| Net income | 0 | 0 | 37,037 | 0 | 37,037 |
| Other comprehensive income/(loss) | 0 | 0 | 0 | (970) | (970) |
| Dividends and dividend equivalents declared | 0 | 0 | (10,676) | 0 | (10,676) |
| Repurchase of common stock | (328,837) | 0 | (22,950) | 0 | (22,950) |
| Share-based compensation | 0 | 2,253 | 0 | 0 | 2,253 |
| Common stock issued, net of shares withheld for employee taxes | 48,873 | (143) | (444) | 0 | (587) |
| Tax benefit from equity awards, including transfer pricing adjustments | 0 | 1,232 | 0 | 0 | 1,232 |
| Balances as of September 28, 2013 | 6,294,494 | 19,764 | 104,256 | (471) | 123,549 |
| Net income | 0 | 0 | 39,510 | 0 | 39,510 |
| Other comprehensive income/(loss) | 0 | 0 | 0 | 1,553 | 1,553 |
| Dividends and dividend equivalents declared | 0 | 0 | (11,215) | 0 | (11,215) |
| Repurchase of common stock | (488,677) | 0 | (45,000) | 0 | (45,000) |
| Share-based compensation | 0 | 2,863 | 0 | 0 | 2,863 |
| Common stock issued, net of shares withheld for employee taxes | 60,344 | (49) | (399) | 0 | (448) |
| Tax benefit from equity awards, including transfer pricing adjustments | 0 | 735 | 0 | 0 | 735 |
| Balances as of September 27, 2014 | 5,866,161 | 23,313 | 87,152 | 1,082 | 111,547 |
| Net income | 0 | 0 | 53,394 | 0 | 53,394 |
| Other comprehensive income/(loss) | 0 | 0 | 0 | (1,427) | (1,427) |
| Dividends and dividend equivalents declared | 0 | 0 | (11,627) | 0 | (11,627) |
| Repurchase of common stock | (325,032) | 0 | (36,026) | 0 | (36,026) |
| Share-based compensation | 0 | 3,586 | 0 | 0 | 3,586 |
| Common stock issued, net of shares withheld for employee taxes | 37,624 | (231) | (609) | 0 | (840) |
| Tax benefit from equity awards, including transfer pricing adjustments | 0 | 748 | 0 | 0 | 748 |
| Balances as of September 26, 2015 | 5,578,753 | $ 27,416 | $ 92,284 | $ (345) | $ 119,355 |

See accompanying Notes to Consolidated Financial Statements.

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## CONSOLIDATED STATEMENTS OF CASH FLOWS

(In millions)

| | Years ended | | |
|---|---|---|---|
| | September 26, 2015 | September 27, 2014 | September 28, 2013 |
| Cash and cash equivalents, beginning of the year | $ 13,844 | $ 14,259 | $ 10,746 |
| Operating activities: | | | |
| Net income | 53,394 | 39,510 | 37,037 |
| Adjustments to reconcile net income to cash generated by operating activities: | | | |
| Depreciation and amortization | 11,257 | 7,946 | 6,757 |
| Share-based compensation expense | 3,586 | 2,863 | 2,253 |
| Deferred income tax expense | 1,382 | 2,347 | 1,141 |
| Changes in operating assets and liabilities: | | | |
| Accounts receivable, net | 611 | (4,232) | (2,172) |
| Inventories | (238) | (76) | (973) |
| Vendor non-trade receivables | (3,735) | (2,220) | 223 |
| Other current and non-current assets | (179) | 167 | 1,080 |
| Accounts payable | 5,400 | 5,938 | 2,340 |
| Deferred revenue | 1,042 | 1,460 | 1,459 |
| Other current and non-current liabilities | 8,746 | 6,010 | 4,521 |
| Cash generated by operating activities | 81,266 | 59,713 | 53,666 |
| Investing activities: | | | |
| Purchases of marketable securities | (166,402) | (217,128) | (148,489) |
| Proceeds from maturities of marketable securities | 14,538 | 18,810 | 20,317 |
| Proceeds from sales of marketable securities | 107,447 | 189,301 | 104,130 |
| Payments made in connection with business acquisitions, net | (343) | (3,765) | (496) |
| Payments for acquisition of property, plant and equipment | (11,247) | (9,571) | (8,165) |
| Payments for acquisition of intangible assets | (241) | (242) | (911) |
| Other | (26) | 16 | (160) |
| Cash used in investing activities | (56,274) | (22,579) | (33,774) |
| Financing activities: | | | |
| Proceeds from issuance of common stock | 543 | 730 | 530 |
| Excess tax benefits from equity awards | 749 | 739 | 701 |
| Taxes paid related to net share settlement of equity awards | (1,499) | (1,158) | (1,082) |
| Dividends and dividend equivalents paid | (11,561) | (11,126) | (10,564) |
| Repurchase of common stock | (35,253) | (45,000) | (22,860) |
| Proceeds from issuance of term debt, net | 27,114 | 11,960 | 16,896 |
| Change in commercial paper, net | 2,191 | 6,306 | 0 |
| Cash used in financing activities | (17,716) | (37,549) | (16,379) |
| Increase/(decrease) in cash and cash equivalents | 7,276 | (415) | 3,513 |
| Cash and cash equivalents, end of the year | $ 21,120 | $ 13,844 | $ 14,259 |
| Supplemental cash flow disclosure: | | | |
| Cash paid for income taxes, net | $ 13,252 | $ 10,026 | $ 9,128 |
| Cash paid for interest | $ 514 | $ 339 | $ 0 |

See accompanying Notes to Consolidated Financial Statements.

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# Specimen Financial Statements: PepsiCo, Inc.

**PepsiCo, Inc.** is a world leader in convenient snacks, foods, and beverages. The following are PepsiCo's financial statements as presented in its 2015 annual report. The complete annual report, including notes to the financial statements, is available at the company's website.

**Consolidated Statement of Income**
PepsiCo, Inc. and Subsidiaries
Fiscal years ended December 26, 2015, December 27, 2014 and December 28, 2013
(in millions except per share amounts)

| | 2015 | 2014 | 2013 |
|---|---|---|---|
| **Net Revenue** | **$ 63,056** | $ 66,683 | $ 66,415 |
| Cost of sales | **28,384** | 30,884 | 31,243 |
| Gross profit | **34,672** | 35,799 | 35,172 |
| Selling, general and administrative expenses | **24,885** | 26,126 | 25,357 |
| Venezuela impairment charges | **1,359** | — | — |
| Amortization of intangible assets | **75** | 92 | 110 |
| **Operating Profit** | **8,353** | 9,581 | 9,705 |
| Interest expense | **(970)** | (909) | (911) |
| Interest income and other | **59** | 85 | 97 |
| Income before income taxes | **7,442** | 8,757 | 8,891 |
| Provision for income taxes | **1,941** | 2,199 | 2,104 |
| Net income | **5,501** | 6,558 | 6,787 |
| Less: Net income attributable to noncontrolling interests | **49** | 45 | 47 |
| **Net Income Attributable to PepsiCo** | **$ 5,452** | $ 6,513 | $ 6,740 |
| **Net Income Attributable to PepsiCo per Common Share** | | | |
| **Basic** | **$ 3.71** | $ 4.31 | $ 4.37 |
| **Diluted** | **$ 3.67** | $ 4.27 | $ 4.32 |
| Weighted-average common shares outstanding | | | |
| Basic | **1,469** | 1,509 | 1,541 |
| Diluted | **1,485** | 1,527 | 1,560 |
| Cash dividends declared per common share | **$ 2.7625** | $ 2.5325 | $ 2.24 |

See accompanying notes to the consolidated financial statements.

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## Consolidated Statement of Comprehensive Income

PepsiCo, Inc. and Subsidiaries
Fiscal years ended December 26, 2015, December 27, 2014 and December 28, 2013
(in millions)

| | 2015 | | |
|---|---|---|---|
| | **Pre-tax amounts** | **Tax amounts** | **After-tax amounts** |
| Net income | | | **$ 5,501** |
| Other Comprehensive Loss | | | |
| Currency translation: | | | |
| Currency translation adjustment | **$ (2,938)** | **$ —** | **(2,938)** |
| Reclassification associated with Venezuelan entities | **111** | **—** | **111** |
| Cash flow hedges: | | | |
| Reclassification of net losses to net income | **97** | **(47)** | **50** |
| Net derivative losses | **(95)** | **48** | **(47)** |
| Pension and retiree medical: | | | |
| Reclassification of net losses to net income | **246** | **(74)** | **172** |
| Reclassification associated with Venezuelan entities | **20** | **(4)** | **16** |
| Remeasurement of net liabilities and translation | **(88)** | **71** | **(17)** |
| Unrealized gains on securities | **3** | **(2)** | **1** |
| Total Other Comprehensive Loss | **$ (2,644)** | **$ (8)** | **(2,652)** |
| Comprehensive income | | | **2,849** |
| Comprehensive income attributable to noncontrolling interests | | | **(47)** |
| **Comprehensive Income Attributable to PepsiCo** | | | **$ 2,802** |

| | 2014 | | |
|---|---|---|---|
| | Pre-tax amounts | Tax amounts | After-tax amounts |
| Net income | | | $ 6,558 |
| Other Comprehensive Loss | | | |
| Currency translation adjustment | $ (5,010) | $ — | (5,010) |
| Cash flow hedges: | | | |
| Reclassification of net losses to net income | 249 | (95) | 154 |
| Net derivative losses | (88) | 44 | (44) |
| Pension and retiree medical: | | | |
| Reclassification of net losses to net income | 369 | (122) | 247 |
| Remeasurement of net liabilities and translation | (1,323) | 437 | (886) |
| Unrealized losses on securities | (11) | 5 | (6) |
| Other | 1 | — | 1 |
| Total Other Comprehensive Loss | $ (5,813) | $ 269 | (5,544) |
| Comprehensive income | | | 1,014 |
| Comprehensive income attributable to noncontrolling interests | | | (43) |
| **Comprehensive Income Attributable to PepsiCo** | | | $ 971 |

| | 2013 | | |
|---|---|---|---|
| | Pre-tax amounts | Tax amounts | After-tax amounts |
| Net income | | | $ 6,787 |
| Other Comprehensive Income | | | |
| Currency translation adjustment | $ (1,303) | $ — | (1,303) |
| Cash flow hedges: | | | |
| Reclassification of net losses to net income | 45 | (17) | 28 |
| Net derivative losses | (20) | 10 | (10) |
| Pension and retiree medical: | | | |
| Reclassification of net losses to net income | 353 | (123) | 230 |
| Remeasurement of net liabilities and translation | 2,164 | (764) | 1,400 |
| Unrealized gains on securities | 57 | (28) | 29 |
| Other | — | (16) | (16) |
| Total Other Comprehensive Income | $ 1,296 | $ (938) | 358 |
| Comprehensive income | | | 7,145 |
| Comprehensive income attributable to noncontrolling interests | | | (45) |
| **Comprehensive Income Attributable to PepsiCo** | | | $ 7,100 |

See accompanying notes to the consolidated financial statements.

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**Consolidated Statement of Cash Flows**
PepsiCo, Inc. and Subsidiaries
Fiscal years ended December 26, 2015, December 27, 2014 and December 28, 2013
(in millions)

| | 2015 | 2014 | 2013 |
|---|---|---|---|
| **Operating Activities** | | | |
| Net income | **$ 5,501** | $ 6,558 | $ 6,787 |
| Depreciation and amortization | **2,416** | 2,625 | 2,663 |
| Share-based compensation expense | **295** | 297 | 303 |
| Merger and integration charges | **—** | — | 10 |
| Cash payments for merger and integration charges | **—** | — | (25) |
| Restructuring and impairment charges | **230** | 418 | 163 |
| Cash payments for restructuring charges | **(208)** | (266) | (133) |
| Charge related to the transaction with Tingyi | **73** | — | — |
| Cash payments for restructuring and other charges related to the transaction with Tingyi | **—** | — | (26) |
| Venezuela impairment charges | **1,359** | — | — |
| Venezuela remeasurement charges | **—** | 105 | 111 |
| Excess tax benefits from share-based payment arrangements | **(133)** | (114) | (117) |
| Pension and retiree medical plan expenses | **467** | 667 | 663 |
| Pension and retiree medical plan contributions | **(205)** | (655) | (262) |
| Deferred income taxes and other tax charges and credits | **78** | (19) | (1,058) |
| Change in assets and liabilities: | | | |
| Accounts and notes receivable | **(461)** | (343) | (88) |
| Inventories | **(244)** | (111) | 4 |
| Prepaid expenses and other current assets | **(50)** | 80 | (51) |
| Accounts payable and other current liabilities | **1,692** | 1,162 | 1,007 |
| Income taxes payable | **55** | 371 | 86 |
| Other, net | **(285)** | (269) | (349) |
| **Net Cash Provided by Operating Activities** | **10,580** | 10,506 | 9,688 |
| | | | |
| **Investing Activities** | | | |
| Capital spending | **(2,758)** | (2,859) | (2,795) |
| Sales of property, plant and equipment | **86** | 115 | 109 |
| Acquisitions and investments in noncontrolled affiliates | **(86)** | (88) | (109) |
| Reduction of cash due to Venezuela deconsolidation | **(568)** | — | — |
| Divestitures | **76** | 203 | 130 |
| Short-term investments, by original maturity | | | |
| More than three months - purchases | **(4,428)** | (6,305) | — |
| More than three months - maturities | **4,111** | 3,891 | — |
| Three months or less, net | **3** | 116 | 61 |
| Other investing, net | **(5)** | (10) | (21) |
| **Net Cash Used for Investing Activities** | **(3,569)** | (4,937) | (2,625) |
| **Financing Activities** | | | |
| Proceeds from issuances of long-term debt | **$ 8,702** | $ 3,855 | $ 4,195 |
| Payments of long-term debt | **(4,095)** | (2,189) | (3,894) |
| Short-term borrowings, by original maturity | | | |
| More than three months - proceeds | **15** | 50 | 23 |
| More than three months - payments | **(43)** | (10) | (492) |
| Three months or less, net | **53** | (2,037) | 1,634 |
| Cash dividends paid | **(4,040)** | (3,730) | (3,434) |
| Share repurchases - common | **(5,000)** | (5,012) | (3,001) |
| Share repurchases - preferred | **(5)** | (10) | (7) |
| Proceeds from exercises of stock options | **504** | 755 | 1,123 |
| Excess tax benefits from share-based payment arrangements | **133** | 114 | 117 |
| Acquisition of noncontrolling interests | **—** | — | (20) |
| Other financing | **(52)** | (50) | (33) |
| **Net Cash Used for Financing Activities** | **(3,828)** | (8,264) | (3,789) |
| Effect of exchange rate changes on cash and cash equivalents | **(221)** | (546) | (196) |
| **Net Increase/(Decrease) in Cash and Cash Equivalents** | **2,962** | (3,241) | 3,078 |
| **Cash and Cash Equivalents, Beginning of Year** | **6,134** | 9,375 | 6,297 |
| **Cash and Cash Equivalents, End of Year** | **$ 9,096** | $ 6,134 | $ 9,375 |

See accompanying notes to the consolidated financial statements.

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**Consolidated Balance Sheet**
PepsiCo, Inc. and Subsidiaries
December 26, 2015 and December 27, 2014
(in millions except per share amounts)

| | 2015 | 2014 |
|---|---|---|
| **ASSETS** | | |
| **Current Assets** | | |
| Cash and cash equivalents | **$ 9,096** | $ 6,134 |
| Short-term investments | **2,913** | 2,592 |
| Accounts and notes receivable, net | **6,437** | 6,651 |
| Inventories | **2,720** | 3,143 |
| Prepaid expenses and other current assets | **1,865** | 2,143 |
| **Total Current Assets** | **23,031** | 20,663 |
| **Property, Plant and Equipment, net** | **16,317** | 17,244 |
| **Amortizable Intangible Assets, net** | **1,270** | 1,449 |
| Goodwill | **14,177** | 14,965 |
| Other nonamortizable intangible assets | **11,811** | 12,639 |
| **Nonamortizable Intangible Assets** | **25,988** | 27,604 |
| **Investments in Noncontrolled Affiliates** | **2,311** | 2,689 |
| **Other Assets** | **750** | 860 |
| **Total Assets** | **$ 69,667** | $ 70,509 |
| | | |
| **LIABILITIES AND EQUITY** | | |
| **Current Liabilities** | | |
| Short-term obligations | **$ 4,071** | $ 5,076 |
| Accounts payable and other current liabilities | **13,507** | 13,016 |
| **Total Current Liabilities** | **17,578** | 18,092 |
| **Long-Term Debt Obligations** | **29,213** | 23,821 |
| **Other Liabilities** | **5,887** | 5,744 |
| **Deferred Income Taxes** | **4,959** | 5,304 |
| **Total Liabilities** | **57,637** | 52,961 |
| Commitments and contingencies | | |
| **Preferred Stock, no par value** | **41** | 41 |
| **Repurchased Preferred Stock** | **(186)** | (181) |
| **PepsiCo Common Shareholders' Equity** | | |
| Common stock, par value $1^2/_3$¢ per share (authorized 3,600 shares, issued, net of repurchased common stock at par value: 1,448 and 1,488 shares, respectively) | **24** | 25 |
| Capital in excess of par value | **4,076** | 4,115 |
| Retained earnings | **50,472** | 49,092 |
| Accumulated other comprehensive loss | **(13,319)** | (10,669) |
| Repurchased common stock, in excess of par value (418 and 378 shares, respectively) | **(29,185)** | (24,985) |
| **Total PepsiCo Common Shareholders' Equity** | **12,068** | 17,578 |
| Noncontrolling interests | **107** | 110 |
| **Total Equity** | **12,030** | 17,548 |
| **Total Liabilities and Equity** | **$ 69,667** | $ 70,509 |

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## Consolidated Statement of Equity

PepsiCo, Inc. and Subsidiaries

Fiscal years ended December 26, 2015, December 27, 2014 and December 28, 2013

(in millions)

| | 2015 | | 2014 | | 2013 | |
|---|---|---|---|---|---|---|
| | Shares | Amount | Shares | Amount | Shares | Amount |
| **Preferred Stock** | 0.8 | $ 41 | 0.8 | $ 41 | 0.8 | $ 41 |
| **Repurchased Preferred Stock** | | | | | | |
| Balance, beginning of year | (0.7) | (181) | (0.6) | (171) | (0.6) | (164) |
| Redemptions | — | (5) | (0.1) | (10) | — | (7) |
| Balance, end of year | (0.7) | (186) | (0.7) | (181) | (0.6) | (171) |
| **Common Stock** | | | | | | |
| Balance, beginning of year | 1,488 | 25 | 1,529 | 25 | 1,544 | 26 |
| Repurchased common stock | (40) | (1) | (41) | — | (15) | (1) |
| Balance, end of year | 1,448 | 24 | 1,488 | 25 | 1,529 | 25 |
| **Capital in Excess of Par Value** | | | | | | |
| Balance, beginning of year | | 4,115 | | 4,095 | | 4,178 |
| Share-based compensation expense | | 299 | | 294 | | 303 |
| Stock option exercises, RSUs, PSUs and PEPunits converted [a] | | (182) | | (200) | | (287) |
| Withholding tax on RSUs, PSUs and PEPunits converted | | (151) | | (91) | | (87) |
| Other | | (5) | | 17 | | (12) |
| Balance, end of year | | 4,076 | | 4,115 | | 4,095 |
| **Retained Earnings** | | | | | | |
| Balance, beginning of year | | 49,092 | | 46,420 | | 43,158 |
| Net income attributable to PepsiCo | | 5,452 | | 6,513 | | 6,740 |
| Cash dividends declared - common | | (4,071) | | (3,840) | | (3,477) |
| Cash dividends declared - preferred | | (1) | | (1) | | (1) |
| Balance, end of year | | 50,472 | | 49,092 | | 46,420 |
| **Accumulated Other Comprehensive Loss** | | | | | | |
| Balance, beginning of year | | (10,669) | | (5,127) | | (5,487) |
| Other comprehensive (loss)/income attributable to PepsiCo | | (2,650) | | (5,542) | | 360 |
| Balance, end of year | | (13,319) | | (10,669) | | (5,127) |
| **Repurchased Common Stock** | | | | | | |
| Balance, beginning of year | (378) | (24,985) | (337) | (21,004) | (322) | (19,458) |
| Share repurchases | (52) | (4,999) | (57) | (5,012) | (37) | (3,000) |
| Stock option exercises, RSUs, PSUs and PEPunits converted | 12 | 794 | 15 | 1,030 | 22 | 1,451 |
| Other | — | 5 | 1 | 1 | — | 3 |
| Balance, end of year | (418) | (29,185) | (378) | (24,985) | (337) | (21,004) |
| **Total PepsiCo Common Shareholders' Equity** | | 12,068 | | 17,578 | | 24,409 |
| **Noncontrolling Interests** | | | | | | |
| Balance, beginning of year | | 110 | | 110 | | 105 |
| Net income attributable to noncontrolling interests | | 49 | | 45 | | 47 |
| Distributions to noncontrolling interests | | (48) | | (41) | | (34) |
| Currency translation adjustment | | (2) | | (2) | | (2) |
| Acquisitions and divestitures | | — | | — | | (6) |
| Other, net | | (2) | | (2) | | — |
| Balance, end of year | | 107 | | 110 | | 110 |
| **Total Equity** | | $ 12,030 | | $ 17,548 | | $ 24,389 |

(a) Includes total tax benefits of $107 million in 2015, $74 million in 2014 and $45 million in 2013.

See accompanying notes to the consolidated financial statements.

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# Specimen Financial Statements: The Coca-Cola Company

**The Coca-Cola Company** is a global leader in the beverage industry. It offers hundreds of brands, including soft drinks, fruit juices, sports drinks and other beverages in more than 200 countries. The following are Coca-Cola's financial statements as presented in its 2015 annual report. The complete annual report, including notes to the financial statements, is available at the company's website.

**THE COCA-COLA COMPANY AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF INCOME**

| Year Ended December 31, | **2015** | 2014 | 2013 |
|---|---|---|---|
| (In millions except per share data) | | | |
| **NET OPERATING REVENUES** | **$ 44,294** | $ 45,998 | $ 46,854 |
| Cost of goods sold | **17,482** | 17,889 | 18,421 |
| **GROSS PROFIT** | **26,812** | 28,109 | 28,433 |
| Selling, general and administrative expenses | **16,427** | 17,218 | 17,310 |
| Other operating charges | **1,657** | 1,183 | 895 |
| **OPERATING INCOME** | **8,728** | 9,708 | 10,228 |
| Interest income | **613** | 594 | 534 |
| Interest expense | **856** | 483 | 463 |
| Equity income (loss) — net | **489** | 769 | 602 |
| Other income (loss) — net | **631** | (1,263) | 576 |
| **INCOME BEFORE INCOME TAXES** | **9,605** | 9,325 | 11,477 |
| Income taxes | **2,239** | 2,201 | 2,851 |
| **CONSOLIDATED NET INCOME** | **7,366** | 7,124 | 8,626 |
| Less: Net income attributable to noncontrolling interests | **15** | 26 | 42 |
| **NET INCOME ATTRIBUTABLE TO SHAREOWNERS OF THE COCA-COLA COMPANY** | **$ 7,351** | $ 7,098 | $ 8,584 |
| **BASIC NET INCOME PER SHARE[1]** | **$ 1.69** | $ 1.62 | $ 1.94 |
| **DILUTED NET INCOME PER SHARE[1]** | **$ 1.67** | $ 1.60 | $ 1.90 |
| **AVERAGE SHARES OUTSTANDING** | **4,352** | 4,387 | 4,434 |
| Effect of dilutive securities | **53** | 63 | 75 |
| **AVERAGE SHARES OUTSTANDING ASSUMING DILUTION** | **4,405** | 4,450 | 4,509 |

[1] Calculated based on net income attributable to shareowners of The Coca-Cola Company.

Refer to Notes to Consolidated Financial Statements.

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**THE COCA-COLA COMPANY AND SUBSIDIARIES**

**CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME**

| Year Ended December 31, | **2015** | 2014 | 2013 |
|---|---|---|---|
| (In millions) | | | |
| **CONSOLIDATED NET INCOME** | **$ 7,366** | $ 7,124 | $ 8,626 |
| Other comprehensive income: | | | |
| Net foreign currency translation adjustment | **(3,959)** | (2,382) | (1,187) |
| Net gain (loss) on derivatives | **142** | 357 | 151 |
| Net unrealized gain (loss) on available-for-sale securities | **(684)** | 714 | (80) |
| Net change in pension and other benefit liabilities | **86** | (1,039) | 1,066 |
| **TOTAL COMPREHENSIVE INCOME** | **2,951** | 4,774 | 8,576 |
| Less: Comprehensive income (loss) attributable to noncontrolling interests | **(3)** | 21 | 39 |
| **TOTAL COMPREHENSIVE INCOME ATTRIBUTABLE TO SHAREOWNERS OF THE COCA-COLA COMPANY** | **$ 2,954** | $ 4,753 | $ 8,537 |

Refer to Notes to Consolidated Financial Statements.

**THE COCA-COLA COMPANY AND SUBSIDIARIES**

**CONSOLIDATED BALANCE SHEETS**

| December 31, | **2015** | 2014 |
|---|---|---|
| (In millions except par value) | | |
| **ASSETS** | | |
| CURRENT ASSETS | | |
| Cash and cash equivalents | **$ 7,309** | $ 8,958 |
| Short-term investments | **8,322** | 9,052 |
| TOTAL CASH, CASH EQUIVALENTS AND SHORT-TERM INVESTMENTS | **15,631** | 18,010 |
| Marketable securities | **4,269** | 3,665 |
| Trade accounts receivable, less allowances of $352 and $331, respectively | **3,941** | 4,466 |
| Inventories | **2,902** | 3,100 |
| Prepaid expenses and other assets | **2,752** | 3,066 |
| Assets held for sale | **3,900** | 679 |
| TOTAL CURRENT ASSETS | **33,395** | 32,986 |
| EQUITY METHOD INVESTMENTS | **12,318** | 9,947 |
| OTHER INVESTMENTS | **3,470** | 3,678 |
| OTHER ASSETS | **4,207** | 4,407 |
| PROPERTY, PLANT AND EQUIPMENT — net | **12,571** | 14,633 |
| TRADEMARKS WITH INDEFINITE LIVES | **5,989** | 6,533 |
| BOTTLERS' FRANCHISE RIGHTS WITH INDEFINITE LIVES | **6,000** | 6,689 |
| GOODWILL | **11,289** | 12,100 |
| OTHER INTANGIBLE ASSETS | **854** | 1,050 |
| TOTAL ASSETS | **$ 90,093** | $ 92,023 |
| **LIABILITIES AND EQUITY** | | |
| CURRENT LIABILITIES | | |
| Accounts payable and accrued expenses | **$ 9,660** | $ 9,234 |
| Loans and notes payable | **13,129** | 19,130 |
| Current maturities of long-term debt | **2,677** | 3,552 |
| Accrued income taxes | **331** | 400 |
| Liabilities held for sale | **1,133** | 58 |
| TOTAL CURRENT LIABILITIES | **26,930** | 32,374 |
| LONG-TERM DEBT | **28,407** | 19,063 |
| OTHER LIABILITIES | **4,301** | 4,389 |
| DEFERRED INCOME TAXES | **4,691** | 5,636 |
| THE COCA-COLA COMPANY SHAREOWNERS' EQUITY | | |
| Common stock, $0.25 par value; Authorized — 11,200 shares; Issued — 7,040 and 7,040 shares, respectively | **1,760** | 1,760 |
| Capital surplus | **14,016** | 13,154 |
| Reinvested earnings | **65,018** | 63,408 |
| Accumulated other comprehensive income (loss) | **(10,174)** | (5,777) |
| Treasury stock, at cost — 2,716 and 2,674 shares, respectively | **(45,066)** | (42,225) |
| EQUITY ATTRIBUTABLE TO SHAREOWNERS OF THE COCA-COLA COMPANY | **25,554** | 30,320 |
| EQUITY ATTRIBUTABLE TO NONCONTROLLING INTERESTS | **210** | 241 |
| TOTAL EQUITY | **25,764** | 30,561 |
| TOTAL LIABILITIES AND EQUITY | **$ 90,093** | $ 92,023 |

Refer to Notes to Consolidated Financial Statements.

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## THE COCA-COLA COMPANY AND SUBSIDIARIES

## CONSOLIDATED STATEMENTS OF CASH FLOWS

| Year Ended December 31, | **2015** | 2014 | 2013 |
|---|---|---|---|
| (In millions) | | | |
| **OPERATING ACTIVITIES** | | | |
| Consolidated net income | **$ 7,366** | $ 7,124 | $ 8,626 |
| Depreciation and amortization | **1,970** | 1,976 | 1,977 |
| Stock-based compensation expense | **236** | 209 | 227 |
| Deferred income taxes | **73** | (40) | 648 |
| Equity (income) loss — net of dividends | **(122)** | (371) | (201) |
| Foreign currency adjustments | **(137)** | 415 | 168 |
| Significant (gains) losses on sales of assets — net | **(374)** | 831 | (670) |
| Other operating charges | **929** | 761 | 465 |
| Other items | **744** | 149 | 234 |
| Net change in operating assets and liabilities | **(157)** | (439) | (932) |
| Net cash provided by operating activities | **10,528** | 10,615 | 10,542 |
| **INVESTING ACTIVITIES** | | | |
| Purchases of investments | **(15,831)** | (17,800) | (14,782) |
| Proceeds from disposals of investments | **14,079** | 12,986 | 12,791 |
| Acquisitions of businesses, equity method investments and nonmarketable securities | **(2,491)** | (389) | (353) |
| Proceeds from disposals of businesses, equity method investments and nonmarketable securities | **565** | 148 | 872 |
| Purchases of property, plant and equipment | **(2,553)** | (2,406) | (2,550) |
| Proceeds from disposals of property, plant and equipment | **85** | 223 | 111 |
| Other investing activities | **(40)** | (268) | (303) |
| Net cash provided by (used in) investing activities | **(6,186)** | (7,506) | (4,214) |
| **FINANCING ACTIVITIES** | | | |
| Issuances of debt | **40,434** | 41,674 | 43,425 |
| Payments of debt | **(37,738)** | (36,962) | (38,714) |
| Issuances of stock | **1,245** | 1,532 | 1,328 |
| Purchases of stock for treasury | **(3,564)** | (4,162) | (4,832) |
| Dividends | **(5,741)** | (5,350) | (4,969) |
| Other financing activities | **251** | (363) | 17 |
| Net cash provided by (used in) financing activities | **(5,113)** | (3,631) | (3,745) |
| **EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH EQUIVALENTS** | **(878)** | (934) | (611) |
| **CASH AND CASH EQUIVALENTS** | | | |
| Net increase (decrease) during the year | **(1,649)** | (1,456) | 1,972 |
| Balance at beginning of year | **8,958** | 10,414 | 8,442 |
| Balance at end of year | **$ 7,309** | $ 8,958 | $ 10,414 |

Refer to Notes to Consolidated Financial Statements.

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## THE COCA-COLA COMPANY AND SUBSIDIARIES

## CONSOLIDATED STATEMENTS OF SHAREOWNERS' EQUITY

| Year Ended December 31, | 2015 | 2014 | 2013 |
|---|---|---|---|
| (In millions except per share data) | | | |
| **EQUITY ATTRIBUTABLE TO SHAREOWNERS OF THE COCA-COLA COMPANY** | | | |
| **NUMBER OF COMMON SHARES OUTSTANDING** | | | |
| Balance at beginning of year | **4,366** | 4,402 | 4,469 |
| Purchases of treasury stock | **(86)** | (98) | (121) |
| Treasury stock issued to employees related to stock compensation plans | **44** | 62 | 54 |
| Balance at end of year | **4,324** | 4,366 | 4,402 |
| **COMMON STOCK** | **$ 1,760** | $ 1,760 | $ 1,760 |
| **CAPITAL SURPLUS** | | | |
| Balance at beginning of year | **13,154** | 12,276 | 11,379 |
| Stock issued to employees related to stock compensation plans | **532** | 526 | 569 |
| Tax benefit (charge) from stock compensation plans | **94** | 169 | 144 |
| Stock-based compensation | **236** | 209 | 227 |
| Other activities | **—** | (26) | (43) |
| Balance at end of year | **14,016** | 13,154 | 12,276 |
| **REINVESTED EARNINGS** | | | |
| Balance at beginning of year | **63,408** | 61,660 | 58,045 |
| Net income attributable to shareowners of The Coca-Cola Company | **7,351** | 7,098 | 8,584 |
| Dividends (per share — $1.32, $1.22 and $1.12 in 2015, 2014 and 2013, respectively) | **(5,741)** | (5,350) | (4,969) |
| Balance at end of year | **65,018** | 63,408 | 61,660 |
| **ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)** | | | |
| Balance at beginning of year | **(5,777)** | (3,432) | (3,385) |
| Net other comprehensive income (loss) | **(4,397)** | (2,345) | (47) |
| Balance at end of year | **(10,174)** | (5,777) | (3,432) |
| **TREASURY STOCK** | | | |
| Balance at beginning of year | **(42,225)** | (39,091) | (35,009) |
| Stock issued to employees related to stock compensation plans | **696** | 891 | 745 |
| Purchases of treasury stock | **(3,537)** | (4,025) | (4,827) |
| Balance at end of year | **(45,066)** | (42,225) | (39,091) |
| **TOTAL EQUITY ATTRIBUTABLE TO SHAREOWNERS OF THE COCA-COLA COMPANY** | **$ 25,554** | $ 30,320 | $ 33,173 |
| **EQUITY ATTRIBUTABLE TO NONCONTROLLING INTERESTS** | | | |
| Balance at beginning of year | **$ 241** | $ 267 | $ 378 |
| Net income attributable to noncontrolling interests | **15** | 26 | 42 |
| Net foreign currency translation adjustment | **(18)** | (5) | (3) |
| Dividends paid to noncontrolling interests | **(31)** | (25) | (58) |
| Acquisition of interests held by noncontrolling owners | **—** | — | (34) |
| Contributions by noncontrolling interests | **—** | — | 6 |
| Business combinations | **(3)** | (22) | 25 |
| Deconsolidation of certain entities | **—** | — | (89) |
| Other activities | **6** | — | — |
| **TOTAL EQUITY ATTRIBUTABLE TO NONCONTROLLING INTERESTS** | **$ 210** | $ 241 | $ 267 |

Refer to Notes to Consolidated Financial Statements.

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# Specimen Financial Statements: Amazon.com, Inc.

**Amazon.com, Inc.** is the world's largest online retailer. It also produces consumer electronics—notably the Kindle e-book reader and the Kindle Fire Tablet computer—and is a major provider of cloud computing services. The following are Amazon's financial statements as presented in the company's 2015 annual report. The complete annual report, including notes to the financial statements, is available at the company's website.

**AMAZON.COM, INC.**

**CONSOLIDATED STATEMENTS OF CASH FLOWS**
**(in millions)**

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2015 | 2014 | 2013 |
| CASH AND CASH EQUIVALENTS, BEGINNING OF PERIOD | $ 14,557 | $ 8,658 | $ 8,084 |
| OPERATING ACTIVITIES: | | | |
| Net income (loss) | 596 | (241) | 274 |
| Adjustments to reconcile net income (loss) to net cash from operating activities: | | | |
| Depreciation of property and equipment, including internal-use software and website development, and other amortization, including capitalized content costs | 6,281 | 4,746 | 3,253 |
| Stock-based compensation | 2,119 | 1,497 | 1,134 |
| Other operating expense (income), net | 155 | 129 | 114 |
| Losses (gains) on sales of marketable securities, net | 5 | (3) | 1 |
| Other expense (income), net | 245 | 62 | 166 |
| Deferred income taxes | 81 | (316) | (156) |
| Excess tax benefits from stock-based compensation | (119) | (6) | (78) |
| Changes in operating assets and liabilities: | | | |
| Inventories | (2,187) | (1,193) | (1,410) |
| Accounts receivable, net and other | (1,755) | (1,039) | (846) |
| Accounts payable | 4,294 | 1,759 | 1,888 |
| Accrued expenses and other | 913 | 706 | 736 |
| Additions to unearned revenue | 7,401 | 4,433 | 2,691 |
| Amortization of previously unearned revenue | (6,109) | (3,692) | (2,292) |
| Net cash provided by (used in) operating activities | 11,920 | 6,842 | 5,475 |
| INVESTING ACTIVITIES: | | | |
| Purchases of property and equipment, including internal-use software and website development, net | (4,589) | (4,893) | (3,444) |
| Acquisitions, net of cash acquired, and other | (795) | (979) | (312) |
| Sales and maturities of marketable securities | 3,025 | 3,349 | 2,306 |
| Purchases of marketable securities | (4,091) | (2,542) | (2,826) |
| Net cash provided by (used in) investing activities | (6,450) | (5,065) | (4,276) |

(*continued next page*)

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**AMAZON.COM, INC.**

**CONSOLIDATED STATEMENTS OF CAS**
**(in millions)**

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2015 | 2014 | 2013 |
| (*continued*) | | | |
| FINANCING ACTIVITIES: | | | |
| Excess tax benefits from stock-based compensation | 119 | 6 | 78 |
| Proceeds from long-term debt and other | 353 | 6,359 | 394 |
| Repayments of long-term debt and other | (1,652) | (513) | (231) |
| Principal repayments of capital lease obligations | (2,462) | (1,285) | (775) |
| Principal repayments of finance lease obligations | (121) | (135) | (5) |
| Net cash provided by (used in) financing activities | (3,763) | 4,432 | (539) |
| Foreign-currency effect on cash and cash equivalents | (374) | (310) | (86) |
| Net increase (decrease) in cash and cash equivalents | 1,333 | 5,899 | 574 |
| CASH AND CASH EQUIVALENTS, END OF PERIOD | $ 15,890 | $ 14,557 | $ 8,658 |
| SUPPLEMENTAL CASH FLOW INFORMATION: | | | |
| Cash paid for interest on long-term debt | $ 325 | $ 91 | $ 97 |
| Cash paid for interest on capital and finance lease obligations | 153 | 86 | 41 |
| Cash paid for income taxes (net of refunds) | 273 | 177 | 169 |
| Property and equipment acquired under capital leases | 4,717 | 4,008 | 1,867 |
| Property and equipment acquired under build-to-suit leases | 544 | 920 | 877 |

See accompanying notes to consolidated financial statements.

**AMAZON.COM, INC.**

**CONSOLIDATED STATEMENTS OF OPERATIONS**
**(in millions, except per share data)**

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2015 | 2014 | 2013 |
| Net product sales | $ 79,268 | $ 70,080 | $ 60,903 |
| Net service sales | 27,738 | 18,908 | 13,549 |
| Total net sales | 107,006 | 88,988 | 74,452 |
| Operating expenses (1): | | | |
| Cost of sales | 71,651 | 62,752 | 54,181 |
| Fulfillment | 13,410 | 10,766 | 8,585 |
| Marketing | 5,254 | 4,332 | 3,133 |
| Technology and content | 12,540 | 9,275 | 6,565 |
| General and administrative | 1,747 | 1,552 | 1,129 |
| Other operating expense (income), net | 171 | 133 | 114 |
| Total operating expenses | 104,773 | 88,810 | 73,707 |
| Income from operations | 2,233 | 178 | 745 |
| Interest income | 50 | 39 | 38 |
| Interest expense | (459) | (210) | (141) |
| Other income (expense), net | (256) | (118) | (136) |
| Total non-operating income (expense) | (665) | (289) | (239) |
| Income (loss) before income taxes | 1,568 | (111) | 506 |
| Provision for income taxes | (950) | (167) | (161) |
| Equity-method investment activity, net of tax | (22) | 37 | (71) |
| Net income (loss) | $ 596 | $ (241) | $ 274 |
| Basic earnings per share | $ 1.28 | $ (0.52) | $ 0.60 |
| Diluted earnings per share | $ 1.25 | $ (0.52) | $ 0.59 |
| Weighted-average shares used in computation of earnings per share: | | | |
| Basic | 467 | 462 | 457 |
| Diluted | 477 | 462 | 465 |

(1) Includes stock-based compensation as follows:

| | | | |
|---|---|---|---|
| Fulfillment | $ 482 | $ 375 | $ 294 |
| Marketing | 190 | 125 | 88 |
| Technology and content | 1,224 | 804 | 603 |
| General and administrative | 223 | 193 | 149 |

See accompanying notes to consolidated financial statements.

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**AMAZON.COM, INC.**

**CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)**
**(in millions)**

| | Year Ended December 31, | | |
|---|---|---|---|
| | **2015** | **2014** | **2013** |
| Net income (loss) | $ 596 | $ (241) | $ 274 |
| Other comprehensive income (loss): | | | |
| Foreign currency translation adjustments, net of tax of $10, $(3), and $(20) | (210) | (325) | 63 |
| Net change in unrealized gains (losses) on available-for-sale securities: | | | |
| Unrealized gains (losses), net of tax of $(5), $1, and $3 | (7) | 2 | (10) |
| Reclassification adjustment for losses (gains) included in "Other income (expense), net," net of tax of $0, $(1), and $(1) | 5 | (3) | 1 |
| Net unrealized gains (losses) on available-for-sale securities | (2) | (1) | (9) |
| Total other comprehensive income (loss) | (212) | (326) | 54 |
| Comprehensive income (loss) | $ 384 | $ (567) | $ 328 |

See accompanying notes to consolidated financial statements.

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**AMAZON.COM, INC.**

**CONSOLIDATED BALANCE SHEETS**
**(in millions, except per share data)**

| | December 31, 2015 | December 31, 2014 |
|---|---|---|
| **ASSETS** | | |
| Current assets: | | |
| Cash and cash equivalents | $ 15,890 | $ 14,557 |
| Marketable securities | 3,918 | 2,859 |
| Inventories | 10,243 | 8,299 |
| Accounts receivable, net and other | 6,423 | 5,612 |
| Total current assets | 36,474 | 31,327 |
| Property and equipment, net | 21,838 | 16,967 |
| Goodwill | 3,759 | 3,319 |
| Other assets | 3,373 | 2,892 |
| Total assets | $ 65,444 | $ 54,505 |
| **LIABILITIES AND STOCKHOLDERS' EQUITY** | | |
| Current liabilities: | | |
| Accounts payable | $ 20,397 | $ 16,459 |
| Accrued expenses and other | 10,384 | 9,807 |
| Unearned revenue | 3,118 | 1,823 |
| Total current liabilities | 33,899 | 28,089 |
| Long-term debt | 8,235 | 8,265 |
| Other long-term liabilities | 9,926 | 7,410 |
| Commitments and contingencies (Note 7) | | |
| Stockholders' equity: | | |
| Preferred stock, $0.01 par value: | | |
| Authorized shares — 500 | | |
| Issued and outstanding shares — none | — | — |
| Common stock, $0.01 par value: | | |
| Authorized shares — 5,000 | | |
| Issued shares — 494 and 488 | | |
| Outstanding shares — 471 and 465 | 5 | 5 |
| Treasury stock, at cost | (1,837) | (1,837) |
| Additional paid-in capital | 13,394 | 11,135 |
| Accumulated other comprehensive loss | (723) | (511) |
| Retained earnings | 2,545 | 1,949 |
| Total stockholders' equity | 13,384 | 10,741 |
| Total liabilities and stockholders' equity | $ 65,444 | $ 54,505 |

See accompanying notes to consolidated financial statements.

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**AMAZON.COM, INC.**

**CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY**
**(in millions)**

| | Common Stock | | | | | | |
|---|---|---|---|---|---|---|---|
| | Shares | Amount | Treasury Stock | Additional Paid-In Capital | Accumulated Other Comprehensive Income (Loss) | Retained Earnings | Total Stockholders' Equity |
| Balance as of January 1, 2013 | 454 | $ 5 | $ (1,837) | $ 8,347 | $ (239) | $ 1,916 | $ 8,192 |
| Net income | — | — | — | — | — | 274 | 274 |
| Other comprehensive income (loss) | — | — | — | — | 54 | — | 54 |
| Exercise of common stock options | 5 | — | — | 4 | — | — | 4 |
| Excess tax benefits from stock-based compensation | — | — | — | 73 | — | — | 73 |
| Stock-based compensation and issuance of employee benefit plan stock | — | — | — | 1,149 | — | — | 1,149 |
| Balance as of December 31, 2013 | 459 | 5 | (1,837) | 9,573 | (185) | 2,190 | 9,746 |
| Net loss | — | — | — | — | — | (241) | (241) |
| Other comprehensive income (loss) | — | — | — | — | (326) | — | (326) |
| Exercise of common stock options | 6 | — | — | 2 | — | — | 2 |
| Excess tax benefits from stock-based compensation | — | — | — | 6 | — | — | 6 |
| Stock-based compensation and issuance of employee benefit plan stock | — | — | — | 1,510 | — | — | 1,510 |
| Issuance of common stock for acquisition activity | — | — | — | 44 | — | — | 44 |
| Balance as of December 31, 2014 | 465 | 5 | (1,837) | 11,135 | (511) | 1,949 | 10,741 |
| Net income | — | — | — | — | — | 596 | 596 |
| Other comprehensive income (loss) | — | — | — | — | (212) | — | (212) |
| Exercise of common stock options | 6 | — | — | 4 | — | — | 4 |
| Excess tax benefits from stock-based compensation | — | — | — | 119 | — | — | 119 |
| Stock-based compensation and issuance of employee benefit plan stock | — | — | — | 2,131 | — | — | 2,131 |
| Issuance of common stock for acquisition activity | — | — | — | 5 | — | — | 5 |
| Balance as of December 31, 2015 | 471 | $ 5 | $ (1,837) | $ 13,394 | $ (723) | $ 2,545 | $ 13,384 |

See accompanying notes to consolidated financial statements.

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# Specimen Financial Statements: Wal-Mart Stores, Inc.

The following are **Wal-Mart Stores, Inc.**'s financial statements as presented in the company's 2016 annual report. The complete annual report, including notes to the financial statements, is available at the company's website.

## Consolidated Statements of Income

| *(Amounts in millions, except per share data)* | Fiscal Years Ended January 31, 2016 | 2015 | 2014 |
|---|---|---|---|
| **Revenues:** | | | |
| Net sales | **$478,614** | $482,229 | $473,076 |
| Membership and other income | **3,516** | 3,422 | 3,218 |
| **Total revenues** | **482,130** | 485,651 | 476,294 |
| **Costs and expenses:** | | | |
| Cost of sales | **360,984** | 365,086 | 358,069 |
| Operating, selling, general and administrative expenses | **97,041** | 93,418 | 91,353 |
| **Operating income** | **24,105** | 27,147 | 26,872 |
| **Interest:** | | | |
| Debt | **2,027** | 2,161 | 2,072 |
| Capital lease and financing obligations | **521** | 300 | 263 |
| Interest income | **(81)** | (113) | (119) |
| Interest, net | **2,467** | 2,348 | 2,216 |
| **Income from continuing operations before income taxes** | **21,638** | 24,799 | 24,656 |
| **Provision for income taxes:** | | | |
| Current | **7,584** | 8,504 | 8,619 |
| Deferred | **(1,026)** | (519) | (514) |
| **Total provision for income taxes** | **6,558** | 7,985 | 8,105 |
| **Income from continuing operations** | **15,080** | 16,814 | 16,551 |
| **Income from discontinued operations, net of income taxes** | **—** | 285 | 144 |
| **Consolidated net income** | **15,080** | 17,099 | 16,695 |
| **Consolidated net income attributable to noncontrolling interest** | **(386)** | (736) | (673) |
| **Consolidated net income attributable to Walmart** | **$ 14,694** | $ 16,363 | $ 16,022 |
| **Basic net income per common share:** | | | |
| Basic income per common share from continuing operations attributable to Walmart | **$ 4.58** | $ 5.01 | $ 4.87 |
| Basic income per common share from discontinued operations attributable to Walmart | **—** | 0.06 | 0.03 |
| **Basic net income per common share attributable to Walmart** | **$ 4.58** | $ 5.07 | $ 4.90 |
| **Diluted net income per common share:** | | | |
| Diluted income per common share from continuing operations attributable to Walmart | **$ 4.57** | $ 4.99 | $ 4.85 |
| Diluted income per common share from discontinued operations attributable to Walmart | **—** | 0.06 | 0.03 |
| **Diluted net income per common share attributable to Walmart** | **$ 4.57** | $ 5.05 | $ 4.88 |
| **Weighted-average common shares outstanding:** | | | |
| Basic | **3,207** | 3,230 | 3,269 |
| Diluted | **3,217** | 3,243 | 3,283 |
| **Dividends declared per common share** | **$ 1.96** | $ 1.92 | $ 1.88 |

*See accompanying notes.*

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# Consolidated Statements of Comprehensive Income

| *(Amounts in millions)* | Fiscal Years Ended January 31, 2016 | 2015 | 2014 |
|---|---|---|---|
| **Consolidated net income** | **$15,080** | $17,099 | $16,695 |
| Less consolidated net income attributable to nonredeemable noncontrolling interest | **(386)** | (736) | (606) |
| Less consolidated net income attributable to redeemable noncontrolling interest | **—** | — | (67) |
| **Consolidated net income attributable to Walmart** | **14,694** | 16,363 | 16,022 |
| **Other comprehensive income (loss), net of income taxes** | | | |
| Currency translation and other | **(5,220)** | (4,558) | (3,221) |
| Net investment hedges | **366** | 379 | 75 |
| Cash flow hedges | **(202)** | (470) | 207 |
| Minimum pension liability | **86** | (69) | 153 |
| **Other comprehensive income (loss), net of income taxes** | **(4,970)** | (4,718) | (2,786) |
| Less other comprehensive income (loss) attributable to nonredeemable noncontrolling interest | **541** | 546 | 311 |
| Less other comprehensive income (loss) attributable to redeemable noncontrolling interest | **—** | — | 66 |
| **Other comprehensive income (loss) attributable to Walmart** | **(4,429)** | (4,172) | (2,409) |
| **Comprehensive income, net of income taxes** | **10,110** | 12,381 | 13,909 |
| Less comprehensive income (loss) attributable to nonredeemable noncontrolling interest | **155** | (190) | (295) |
| Less comprehensive income (loss) attributable to redeemable noncontrolling interest | **—** | — | (1) |
| **Comprehensive income attributable to Walmart** | **$10,265** | $12,191 | $13,613 |

*See accompanying notes.*

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# Consolidated Balance Sheets

| (Amounts in millions) | Fiscal Years Ended January 31, 2016 | 2015 |
|---|---|---|
| **ASSETS** | | |
| *Current assets:* | | |
| Cash and cash equivalents | **$ 8,705** | $ 9,135 |
| Receivables, net | **5,624** | 6,778 |
| Inventories | **44,469** | 45,141 |
| Prepaid expenses and other | **1,441** | 2,224 |
| **Total current assets** | **60,239** | 63,278 |
| *Property and equipment:* | | |
| Property and equipment | **176,958** | 177,395 |
| Less accumulated depreciation | **(66,787)** | (63,115) |
| Property and equipment, net | **110,171** | 114,280 |
| *Property under capital lease and financing obligations:* | | |
| Property under capital lease and financing obligations | **11,096** | 5,239 |
| Less accumulated amortization | **(4,751)** | (2,864) |
| Property under capital lease and financing obligations, net | **6,345** | 2,375 |
| Goodwill | **16,695** | 18,102 |
| Other assets and deferred charges | **6,131** | 5,455 |
| **Total assets** | **$199,581** | $203,490 |
| **LIABILITIES AND EQUITY** | | |
| *Current liabilities:* | | |
| Short-term borrowings | **$ 2,708** | $ 1,592 |
| Accounts payable | **38,487** | 38,410 |
| Accrued liabilities | **19,607** | 19,152 |
| Accrued income taxes | **521** | 1,021 |
| Long-term debt due within one year | **2,745** | 4,791 |
| Capital lease and financing obligations due within one year | **551** | 287 |
| **Total current liabilities** | **64,619** | 65,253 |
| Long-term debt | **38,214** | 40,889 |
| Long-term capital lease and financing obligations | **5,816** | 2,606 |
| Deferred income taxes and other | **7,321** | 8,805 |
| Commitments and contingencies | | |
| *Equity:* | | |
| Common stock | **317** | 323 |
| Capital in excess of par value | **1,805** | 2,462 |
| Retained earnings | **90,021** | 85,777 |
| Accumulated other comprehensive income (loss) | **(11,597)** | (7,168) |
| **Total Walmart shareholders' equity** | **80,546** | 81,394 |
| Nonredeemable noncontrolling interest | **3,065** | 4,543 |
| **Total equity** | **83,611** | 85,937 |
| **Total liabilities and equity** | **$199,581** | $203,490 |

*See accompanying notes.*

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# Consolidated Statements of Shareholders' Equity and Redeemable Noncontrolling Interest

| (Amounts in millions) | Common Stock Shares | Common Stock Amount | Capital in Excess of Par Value | Retained Earnings | Accumulated Other Comprehensive Income (Loss) | Total Walmart Shareholders' Equity | Nonredeemable Noncontrolling Interest | Total Equity | Redeemable Noncontrolling Interest |
|---|---|---|---|---|---|---|---|---|---|
| **Balances as of February 1, 2013** | 3,314 | $332 | $ 3,620 | $ 72,978 | $ (587) | $ 76,343 | $ 5,395 | $ 81,738 | $ 519 |
| Consolidated net income | — | — | — | 16,022 | — | 16,022 | 595 | 16,617 | 78 |
| Other comprehensive income, net of income taxes | — | — | — | — | (2,409) | (2,409) | (311) | (2,720) | (66) |
| Cash dividends declared ($1.88 per share) | — | — | — | (6,139) | — | (6,139) | — | (6,139) | — |
| Purchase of Company stock | (87) | (9) | (294) | (6,254) | — | (6,557) | — | (6,557) | — |
| Redemption value adjustment of redeemable noncontrolling interest | — | — | (1,019) | — | — | (1,019) | — | (1,019) | 1,019 |
| Other | 6 | — | 55 | (41) | — | 14 | (595) | (581) | (59) |
| **Balances as of January 31, 2014** | 3,233 | 323 | 2,362 | 76,566 | (2,996) | 76,255 | 5,084 | 81,339 | 1,491 |
| Consolidated net income | — | — | — | 16,363 | — | 16,363 | 736 | 17,099 | — |
| Other comprehensive loss, net of income taxes | — | — | — | — | (4,172) | (4,172) | (546) | (4,718) | — |
| Cash dividends declared ($1.92 per share) | — | — | — | (6,185) | — | (6,185) | — | (6,185) | — |
| Purchase of Company stock | (13) | (1) | (29) | (950) | — | (980) | — | (980) | — |
| Purchase of redeemable noncontrolling interest | — | — | — | — | — | — | — | — | (1,491) |
| Other | 8 | 1 | 129 | (17) | — | 113 | (731) | (618) | — |
| **Balances as of January 31, 2015** | **3,228** | **323** | **2,462** | **85,777** | **(7,168)** | **81,394** | **4,543** | **85,937** | **—** |
| **Consolidated net income** | **—** | **—** | **—** | **14,694** | **—** | **14,694** | **386** | **15,080** | **—** |
| **Other comprehensive income, net of income taxes** | **—** | **—** | **—** | **—** | **(4,429)** | **(4,429)** | **(541)** | **(4,970)** | **—** |
| **Cash dividends declared ($1.96 per share)** | **—** | **—** | **—** | **(6,294)** | **—** | **(6,294)** | **—** | **(6,294)** | **—** |
| **Purchase of Company stock** | **(65)** | **(6)** | **(102)** | **(4,148)** | **—** | **(4,256)** | **—** | **(4,256)** | **—** |
| **Cash dividend declared to noncontrolling interest** | **—** | **—** | **—** | **—** | **—** | **—** | **(691)** | **(691)** | |
| **Other** | **(1)** | **—** | **(555)** | **(8)** | **—** | **(563)** | **(632)** | **(1,195)** | **—** |
| **Balances as of January 31, 2016** | **3,162** | **$317** | **$1,805** | **$90,021** | **$(11,597)** | **$80,546** | **$3,065** | **$83,611** | **$ —** |

*See accompanying notes.*

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# Consolidated Statements of Cash Flows

| *(Amounts in millions)* | Fiscal Years Ended January 31, 2016 | 2015 | 2014 |
|---|---|---|---|
| **Cash flows from operating activities:** | | | |
| Consolidated net income | **$ 15,080** | $ 17,099 | $ 16,695 |
| Income from discontinued operations, net of income taxes | **—** | (285) | (144) |
| Income from continuing operations | **15,080** | 16,814 | 16,551 |
| Adjustments to reconcile income from continuing operations to net cash provided by operating activities: | | | |
| Depreciation and amortization | **9,454** | 9,173 | 8,870 |
| Deferred income taxes | **(672)** | (503) | (279) |
| Other operating activities | **1,410** | 785 | 938 |
| Changes in certain assets and liabilities, net of effects of acquisitions: | | | |
| Receivables, net | **(19)** | (569) | (566) |
| Inventories | **(703)** | (1,229) | (1,667) |
| Accounts payable | **2,008** | 2,678 | 531 |
| Accrued liabilities | **1,303** | 1,249 | 103 |
| Accrued income taxes | **(472)** | 166 | (1,224) |
| Net cash provided by operating activities | **27,389** | 28,564 | 23,257 |
| **Cash flows from investing activities:** | | | |
| Payments for property and equipment | **(11,477)** | (12,174) | (13,115) |
| Proceeds from disposal of property and equipment | **635** | 570 | 727 |
| Proceeds from disposal of certain operations | **246** | 671 | — |
| Other investing activities | **(79)** | (192) | (138) |
| Net cash used in investing activities | **(10,675)** | (11,125) | (12,526) |
| **Cash flows from financing activities:** | | | |
| Net change in short-term borrowings | **1,235** | (6,288) | 911 |
| Proceeds from issuance of long-term debt | **39** | 5,174 | 7,072 |
| Payments of long-term debt | **(4,432)** | (3,904) | (4,968) |
| Dividends paid | **(6,294)** | (6,185) | (6,139) |
| Purchase of Company stock | **(4,112)** | (1,015) | (6,683) |
| Dividends paid to noncontrolling interest | **(719)** | (600) | (426) |
| Purchase of noncontrolling interest | **(1,326)** | (1,844) | (296) |
| Other financing activities | **(513)** | (409) | (260) |
| Net cash used in financing activities | **(16,122)** | (15,071) | (10,789) |
| Effect of exchange rates on cash and cash equivalents | **(1,022)** | (514) | (442) |
| Net increase (decrease) in cash and cash equivalents | **(430)** | 1,854 | (500) |
| Cash and cash equivalents at beginning of year | **9,135** | 7,281 | 7,781 |
| Cash and cash equivalents at end of period | **$ 8,705** | $ 9,135 | $ 7,281 |
| **Supplemental disclosure of cash flow information:** | | | |
| Income taxes paid | **8,111** | 8,169 | 8,641 |
| Interest paid | **2,540** | 2,433 | 2,362 |

*See accompanying notes.*

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# Specimen Financial Statements: Louis Vuitton

**Louis Vuitton** is a French company and is one of the leading international fashion houses in the world. Louis Vuitton has been named the world's most valuable luxury brand. Note that its financial statements are IFRS-based and are presented in euros (€). The complete financial statements are available at the company's website.

## CONSOLIDATED INCOME STATEMENT

| *(EUR millions, except for earnings per share)* | Notes | 2015 | 2014 | 2013 |
|---|---|---|---|---|
| **Revenue** | 23-24 | **35,664** | **30,638** | **29,016** |
| Cost of sales | | (12,553) | (10,801) | (9,997) |
| **Gross margin** | | **23,111** | **19,837** | **19,019** |
| Marketing and selling expenses | | (13,830) | (11,744) | (10,767) |
| General and administrative expenses | | (2,663) | (2,373) | (2,212) |
| Income (loss) from joint ventures and associates | 7 | (13) | (5) | (23) |
| **Profit from recurring operations** | 23-24 | **6,605** | **5,715** | **6,017** |
| Other operating income and expenses | 25 | (221) | (284) | (119) |
| **Operating profit** | | **6,384** | **5,431** | **5,898** |
| Cost of net financial debt | | (78) | (115) | (101) |
| Other financial income and expenses | | (336) | 3,062 | (97) |
| **Net financial income (expense)** | 26 | **(414)** | **2,947** | **(198)** |
| Income taxes | 27 | (1,969) | (2,273) | (1,753) |
| **Net profit before minority interests** | | **4,001** | **6,105** | **3,947** |
| Minority interests | 17 | (428) | (457) | (511) |
| **Net profit, Group share** | | **3,573** | **5,648** | **3,436** |
| **Basic Group share of net earnings per share** *(EUR)* | 28 | **7.11** | **11.27** | **6.87** |
| Number of shares on which the calculation is based | | 502,395,491 | 501,309,369 | 500,283,414 |
| **Diluted Group share of net earnings per share** *(EUR)* | 28 | **7.08** | **11.21** | **6.83** |
| Number of shares on which the calculation is based | | 504,894,946 | 503,861,733 | 503,217,497 |

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# CONSOLIDATED STATEMENT OF COMPREHENSIVE GAINS AND LOSSES

| *(EUR millions)* | 2015 | 2014 | 2013 |
|---|---|---|---|
| **Net profit before minority interests** | **4,001** | **6,105** | **3,947** |
| Translation adjustments | 631 | 534 | (346) |
| Tax impact | 135 | 104 | (48) |
| | **766** | **638** | **(394)** |
| Change in value of available for sale financial assets | (32) | 494 | 963 |
| Amounts transferred to income statement | (91) | (3,326) | (16) |
| Tax impact | 20 | 184 | (35) |
| | **(103)** | **(2,648)** | **912** |
| Change in value of hedges of future foreign currency cash flows | (63) | (30) | 304 |
| Amounts transferred to income statement | 33 | (163) | (265) |
| Tax impact | 3 | 57 | (17) |
| | **(27)** | **(136)** | **22** |
| **Gains and losses recognized in equity, transferable to income statement** | **636** | **(2,146)** | **540** |
| Change in value of vineyard land | 64 | (17) | 369 |
| Amounts transferred to consolidated reserves | - | (10) | - |
| Tax impact | (21) | 9 | (127) |
| | **43** | **(18)** | **242** |
| Employee benefit commitments: change in value resulting from actuarial gains and losses | 42 | (161) | 80 |
| Tax impact | (16) | 52 | (22) |
| | **26** | **(109)** | **58** |
| **Gains and losses recognized in equity, not transferable to income statement** | **69** | **(127)** | **300** |
| **Comprehensive income** | **4,706** | **3,832** | **4,787** |
| Minority interests | (558) | (565) | (532) |
| **Comprehensive income, Group share** | **4,148** | **3,267** | **4,255** |

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# CONSOLIDATED BALANCE SHEET

| ASSETS<br>*(EUR millions)* | Notes | 2015 | 2014 | 2013 |
|---|---|---|---|---|
| Brands and other intangible assets | 3 | 13,572 | 13,031 | 12,596 |
| Goodwill | 4 | 10,122 | 8,810 | 9,058 |
| Property, plant and equipment | 6 | 11,157 | 10,387 | 9,621 |
| Investments in joint ventures and associates | 7 | 729 | 519 | 480 |
| Non-current available for sale financial assets | 8 | 574 | 580 | 7,080 |
| Other non-current assets | 9 | 552 | 489 | 457 |
| Deferred tax | 27 | 1,945 | 1,436 | 913 |
| **Non-current assets** | | **38,651** | **35,252** | **40,205** |
| Inventories and work in progress | 10 | 10,096 | 9,475 | 8,492 |
| Trade accounts receivable | 11 | 2,521 | 2,274 | 2,174 |
| Income taxes | | 384 | 354 | 223 |
| Other current assets | 12 | 2,355 | 1,916 | 1,856 |
| Cash and cash equivalents | 14 | 3,594 | 4,091 | 3,226 |
| **Current assets** | | **18,950** | **18,110** | **15,971** |
| **Total assets** | | **57,601** | **53,362** | **56,176** |

| LIABILITIES AND EQUITY<br>*(EUR millions)* | Notes | 2015 | 2014 | 2013 |
|---|---|---|---|---|
| Share capital | 15.1 | 152 | 152 | 152 |
| Share premium account | 15.1 | 2,579 | 2,655 | 3,849 |
| Treasury shares and LVMH share-settled derivatives | 15.2 | (240) | (374) | (451) |
| Cumulative translation adjustment | 15.4 | 1,137 | 492 | (8) |
| Revaluation reserves | | 949 | 1,019 | 3,900 |
| Other reserves | | 16,189 | 12,171 | 16,001 |
| Net profit, Group share | | 3,573 | 5,648 | 3,436 |
| Equity, Group share | | 24,339 | 21,763 | 26,879 |
| Minority interests | 17 | 1,460 | 1,240 | 1,028 |
| **Total equity** | | **25,799** | **23,003** | **27,907** |
| Long-term borrowings | 18 | 4,511 | 5,054 | 4,149 |
| Non-current provisions | 19 | 1,950 | 2,291 | 1,797 |
| Deferred tax | 27 | 4,685 | 4,392 | 4,280 |
| Other non-current liabilities | 20 | 7,957 | 6,447 | 6,404 |
| **Non-current liabilities** | | **19,103** | **18,184** | **16,630** |
| Short-term borrowings | 18 | 3,769 | 4,189 | 4,674 |
| Trade accounts payable | 21.1 | 3,960 | 3,606 | 3,297 |
| Income taxes | | 640 | 549 | 357 |
| Current provisions | 19 | 421 | 332 | 324 |
| Other current liabilities | 21.2 | 3,909 | 3,499 | 2,987 |
| **Current liabilities** | | **12,699** | **12,175** | **11,639** |
| **Total liabilities and equity** | | **57,601** | **53,362** | **56,176** |

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# CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

| *(EUR millions)* | Number of shares | Share capital | Share premium account | Treasury shares and LVMH-share settled derivatives | Cumulative translation adjustment | Revaluation reserves | | | | Net profit and other reserves | Total equity | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Available for sale financial assets | Hedges of future foreign currency cash flows | Vineyard land | Employee benefit commitments | | Group share | Minority interests | Total |
| Notes | | 15.1 | | 15.2 | 15.4 | | | | | | | 17 | |
| **As of December 31, 2012** | **508,163,349** | **152** | **3,848** | **(414)** | **342** | **1,943** | **118** | **758** | **(88)** | **17,765** | **24,424** | **1,084** | **25,508** |
| Gains and losses recognized in equity | | | | | (350) | 912 | 18 | 188 | 51 | - | 819 | 21 | 840 |
| Net profit | | | | | | | | | | 3,436 | 3,436 | 511 | 3,947 |
| **Comprehensive income** | | **-** | **-** | **-** | **(350)** | **912** | **18** | **188** | **51** | **3,436** | **4,255** | **532** | **4,787** |
| Stock option plan and similar expenses | | | | | | | | | | 31 | 31 | 3 | 34 |
| (Acquisition)/disposal of treasury shares and LVMH share-settled derivatives | | | | (103) | | | | | | (7) | (110) | - | (110) |
| Exercise of LVMH share subscription options | 1,025,418 | | 67 | | | | | | | | 67 | - | 67 |
| Retirement of LVMH shares | (1,395,106) | | (66) | 66 | | | | | | | - | - | - |
| Capital increase in subsidiaries | | | | | | | | | | | - | 8 | 8 |
| Interim and final dividends paid | | | | | | | | | | (1,500) | (1,500) | (228) | (1,728) |
| Acquisition of a controlling interest in Loro Piana | | | | | | | | | | | - | 235 | 235 |
| Changes in control of consolidated entities | | | | | | | | | | 1 | 1 | (1) | - |
| Acquisition and disposal of minority interests' shares | | | | | | | | | | (73) | (73) | (76) | (149) |
| Purchase commitments for minority interests' shares | | | | | | | | | | (216) | (216) | (529) | (745) |
| **As of December 31, 2013** | **507,793,661** | **152** | **3,849** | **(451)** | **(8)** | **2,855** | **136** | **946** | **(37)** | **19,437** | **26,879** | **1,028** | **27,907** |
| Gains and losses recognized in equity | | | | | 500 | (2,648) | (122) | (15) | (96) | - | (2,381) | 108 | (2,273) |
| Net profit | | | | | | | | | | 5,648 | 5,648 | 457 | 6,105 |
| **Comprehensive income** | | **-** | **-** | **-** | **500** | **(2,648)** | **(122)** | **(15)** | **(96)** | **5,648** | **3,267** | **565** | **3,832** |
| Stock option plan and similar expenses | | | | | | | | | | 37 | 37 | 2 | 39 |
| (Acquisition)/disposal of treasury shares and LVMH share-settled derivatives | | | | 27 | | | | | | (17) | 10 | - | 10 |
| Exercise of LVMH share subscription options | 980,323 | | 59 | | | | | | | | 59 | - | 59 |
| Retirement of LVMH shares | (1,062,271) | | (50) | 50 | | | | | | | - | - | - |
| Capital increase in subsidiaries | | | | | | | | | | | - | 3 | 3 |
| Interim and final dividends paid | | | | | | | | | | (1,579) | (1,579) | (328) | (1,907) |
| Distribution in kind of Hermès shares. See Note 8. | | | (1,203) | | | | | | | (5,652) | (6,855) | - | (6,855) |
| Changes in control of consolidated entities | | | | | | | | | | (5) | (5) | 11 | 6 |
| Acquisition and disposal of minority interests' shares | | | | | | | | | | (2) | (2) | 32 | 30 |
| Purchase commitments for minority interests' shares | | | | | | | | | | (48) | (48) | (73) | (121) |
| **As of December 31, 2014** | **507,711,713** | **152** | **2,655** | **(374)** | **492** | **207** | **14** | **931** | **(133)** | **17,819** | **21,763** | **1,240** | **23,003** |
| Gains and losses recognized in equity | | | | | 645 | (103) | (25) | 33 | 25 | - | 575 | 130 | 705 |
| Net profit | | | | | | | | | | 3,573 | 3,573 | 428 | 4,001 |
| **Comprehensive income** | | **-** | **-** | **-** | **645** | **(103)** | **(25)** | **33** | **25** | **3,573** | **4,148** | **558** | **4,706** |
| Stock option plan and similar expenses | | | | | | | | | | 35 | 35 | 2 | 37 |
| (Acquisition)/disposal of treasury shares and LVMH share-settled derivatives | | | | 23 | | | | | | (13) | 10 | - | 10 |
| Exercise of LVMH share subscription options | 552,137 | | 35 | | | | | | | | 35 | - | 35 |
| Retirement of LVMH shares | (1,124,740) | | (111) | 111 | | | | | | | - | - | - |
| Capital increase in subsidiaries | | | | | | | | | | - | - | 89 | 89 |
| Interim and final dividends paid | | | | | | | | | | (1,659) | (1,659) | (229) | (1,888) |
| Changes in control of consolidated entities | | | | | | | | | | (9) | (9) | 1 | (8) |
| Acquisition and disposal of minority interests' shares | | | | | | | | | | 5 | 5 | (3) | 2 |
| Purchase commitments for minority interests' shares | | | | | | | | | | 11 | 11 | (198) | (187) |
| **As of December 31, 2015** | **507,139,110** | **152** | **2,579** | **(240)** | **1,137** | **104** | **(11)** | **964** | **(108)** | **19,762** | **24,339** | **1,460** | **25,799** |

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# CONSOLIDATED CASH FLOW STATEMENT

| *(EUR millions)* | Notes | 2015 | 2014 | 2013 |
|---|---|---|---|---|
| I. OPERATING ACTIVITIES AND OPERATING INVESTMENTS | | | | |
| Operating profit | | 6,384 | 5,431 | 5,898 |
| Income/(loss) and dividends from joint ventures and associates | 7 | 27 | 26 | 49 |
| Net increase in depreciation, amortization and provisions | | 2,081 | 1,895 | 1,435 |
| Other computed expenses | | (456) | (188) | (29) |
| Other adjustments | | (91) | (84) | (76) |
| **Cash from operations before changes in working capital** | | **7,945** | **7,080** | **7,277** |
| Cost of net financial debt: interest paid | | (75) | (116) | (111) |
| Income taxes paid | | (1,807) | (1,639) | (1,832) |
| **Net cash from operating activities before changes in working capital** | | **6,063** | **5,325** | **5,334** |
| Change in working capital | 14.1 | (429) | (718) | (620) |
| **Net cash from operating activities** | | **5,634** | **4,607** | **4,714** |
| Operating investments | 14.2 | (1,955) | (1,775) | (1,657) |
| **Net cash from operating activities and operating investments (free cash flow)** | | **3,679** | **2,832** | **3,057** |
| II. FINANCIAL INVESTMENTS | | | | |
| Purchase of non-current available for sale financial assets | 8 | (78) | (57) | (197) |
| Proceeds from sale of non-current available for sale financial assets | 8 | 68 | 160 | 38 |
| Dividends received | 8 | 4 | 69 | 71 |
| Income taxes paid related to financial investments | | (265) | (237) | (11) |
| Impact of purchase and sale of consolidated investments | 2.4 | (240) | (167) | (2,161) |
| **Net cash from (used in) financial investments** | | **(511)** | **(232)** | **(2,260)** |
| III. TRANSACTIONS RELATING TO EQUITY | | | | |
| Capital increases of LVMH SE | 15.1 | 35 | 59 | 66 |
| Capital increases of subsidiaries subscribed by minority interests | 17 | 81 | 3 | 7 |
| Acquisition and disposals of treasury shares and LVMH share-settled derivatives | 15.2 | 1 | 1 | (113) |
| Interim and final dividends paid by LVMH SE[(a)] | 15.3 | (1,671) | (1,619) | (1,501) |
| Income taxes paid related to interim and final dividends paid | | (304) | (79) | (137) |
| Interim and final dividends paid to minority interests in consolidated subsidiaries | 17 | (228) | (336) | (220) |
| Purchase and proceeds from sale of minority interests | 2.4 | (4) | 10 | (150) |
| **Net cash from (used in) transactions relating to equity** | | **(2,090)** | **(1,961)** | **(2,048)** |
| **Change in cash before financing activities** | | **1,078** | **639** | **(1,251)** |
| IV. FINANCING ACTIVITIES | | | | |
| Proceeds from borrowings | | 1,008 | 2,407 | 3,095 |
| Repayment of borrowings | | (2,443) | (2,100) | (1,057) |
| Purchase and proceeds from sale of current available for sale financial assets | 13 | (3) | (106) | 101 |
| **Net cash from (used in) financing activities** | | **(1,438)** | **201** | **2,139** |
| V. EFFECT OF EXCHANGE RATE CHANGES | | (33) | 27 | 47 |
| **NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS (I+II+III+IV+V)** | | **(393)** | **867** | **935** |
| **CASH AND CASH EQUIVALENTS AT BEGINNING OF PERIOD** | 14 | **3,783** | **2,916** | **1,981** |
| **CASH AND CASH EQUIVALENTS AT END OF PERIOD** | 14 | **3,390** | **3,783** | **2,916** |
| **TOTAL INCOME TAXES PAID** | | **(2,376)** | **(1,955)** | **(1,980)** |
| Transactions included in the table above, generating no change in cash: | | | | |
| - acquisition of assets by means of finance leases | | 4 | 5 | 7 |

(a) The distribution in kind of Hermès shares had no impact on cash, apart from related income tax effects. See Note 8.

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# Time Value of Money

## Appendix Preview

Would you rather receive $1,000 today or a year from now? You should prefer to receive the $1,000 today because you can invest the $1,000 and then earn interest on it. As a result, you will have more than $1,000 a year from now. What this example illustrates is the concept of the **time value of money**. Everyone prefers to receive money today rather than in the future because of the interest factor.

## Appendix Outline

**LEARNING OBJECTIVES**

| | |
|---|---|
| **1** Compute interest and future values. | • Nature of interest<br>• Future value of a single amount<br>• Future value of an annuity |
| **2** Compute present values. | • Present value variables<br>• Present value of a single amount<br>• Present value of an annuity<br>• Time periods and discounting<br>• Present value of a long-term note or bond |
| **3** Compute the present value in capital budgeting situations. | • Using alternative discount rates |
| **4** Use a financial calculator to solve time value of money problems. | • Present value of a single sum<br>• Present value of an annuity<br>• Future value of a single sum<br>• Future value of an annuity<br>• Internal rate of return<br>• Useful financial calculator applications |

# Interest and Future Values

**LEARNING OBJECTIVE 1**

Compute interest and future values.

## Nature of Interest

**Interest** is payment for the use of another person's money. It is the difference between the amount borrowed or invested (called the **principal**) and the amount repaid or collected. The

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amount of interest to be paid or collected is usually stated as a rate over a specific period of time. The rate of interest is generally stated as an annual rate.

The amount of interest involved in any financing transaction is based on three elements:

1. **Principal (*p*):** The original amount borrowed or invested.
2. **Interest Rate (*i*):** An annual percentage of the principal.
3. **Time (*n*):** The number of periods that the principal is borrowed or invested.

## Simple Interest

**Simple interest** is computed on the principal amount only. It is the return on the principal for one period (we use an annual interest rate unless stated otherwise). Simple interest is usually expressed as shown in **Illustration G.1**.

**ILLUSTRATION G.1**
**Interest computation**

| Interest | = | Principal *p* | × | Rate *i* | × | Time *n* |
|---|---|---|---|---|---|---|

For example, if you borrowed $5,000 for 2 years at a simple interest rate of 12% annually, you would pay $1,200 in total interest, computed as follows.

| | | | | | | |
|---|---|---|---|---|---|---|
| Interest | = | *p* | × | *i* | × | *n* |
| | = | $5,000 | × | .12 | × | 2 |
| | = | $1,200 | | | | |

## Compound Interest

**Compound interest** is computed on principal **and** on any interest earned that has not been paid or withdrawn. It is the return on (or growth of) the principal for two or more time periods. Compounding computes interest not only on the principal but also on the interest earned to date on that principal, assuming the interest is left on deposit.

To illustrate the difference between simple and compound interest, assume that you deposit $1,000 in Bank Two, where it will earn simple interest of 9% per year, and you deposit another $1,000 in Citizens Bank, where it will earn compound interest of 9% per year compounded annually. Also assume that in both cases you will not withdraw any cash until three years from the date of deposit. **Illustration G.2** shows the computation of interest to be received and the accumulated year-end balances.

**ILLUSTRATION G.2** **Simple versus compound interest**

**Bank Two**

| Simple Interest Calculation | Simple Interest | Accumulated Year-End Balance |
|---|---|---|
| Year 1 $1,000.00 × 9% | $ 90.00 | $1,090.00 |
| Year 2 $1,000.00 × 9% | 90.00 | $1,180.00 |
| Year 3 $1,000.00 × 9% | 90.00 | $1,270.00 |
| | $ 270.00 | |

$25.03 Difference

**Citizens Bank**

| Compound Interest Calculation | Compound Interest | Accumulated Year-End Balance |
|---|---|---|
| Year 1 $1,000.00 × 9% | $ 90.00 | $1,090.00 |
| Year 2 $1,090.00 × 9% | 98.10 | $1,188.10 |
| Year 3 $1,188.10 × 9% | 106.93 | $1,295.03 |
| | $ 295.03 | |

Note in Illustration G.2 that simple interest uses the initial principal of $1,000 to compute the interest in all three years. Compound interest uses the accumulated balance (principal plus interest to date) at each year-end to compute interest in the succeeding year—which explains why your compound interest account is larger.

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Obviously, if you had a choice between investing your money at simple interest or at compound interest, you would choose compound interest, all other things—especially risk—being equal. In the example, compounding provides $25.03 of additional interest income. For practical purposes, compounding assumes that unpaid interest earned becomes a part of the principal, and the accumulated balance at the end of each year becomes the new principal on which interest is earned during the next year.

Most business situations use compound interest. Simple interest is generally applicable only to short-term situations of one year or less.

## Future Value of a Single Amount

The **future value of a single amount** is the value at a future date of a given amount invested, assuming compound interest. For example, in Illustration G.2, $1,295.03 is the future value of the $1,000 investment earning 9% for three years. The $1,295.03 is determined more easily by using the formula shown in **Illustration G.3**.

$$FV = p \times (1 + i)^n$$

**ILLUSTRATION G.3** **Formula for future value**

where:

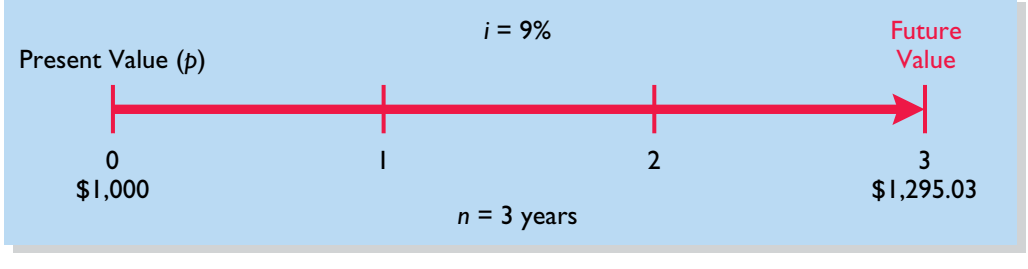
$FV$ = future value of a single amount
$p$ = principal (or present value; the value today)
$i$ = interest rate for one period
$n$ = number of periods

The $1,295.03 is computed as follows.

$$\begin{aligned} FV &= p \times (1 + i)^n \\ &= \$1{,}000 \times (1 + .09)^3 \\ &= \$1{,}000 \times 1.29503 \\ &= \$1{,}295.03 \end{aligned}$$

The 1.29503 is computed by multiplying (1.09 × 1.09 × 1.09). The amounts in this example can be depicted in the time diagram shown in **Illustration G.4**.

**ILLUSTRATION G.4** **Time diagram**




Another method used to compute the future value of a single amount involves a compound interest table. This table shows the future value of 1 for $n$ periods. **Table 1** is such a table.

In Table 1, $n$ is the number of compounding periods, the percentages are the periodic interest rates, and the 5-digit decimal numbers in the respective columns are the future value of 1 factors. To use Table 1, you multiply the principal amount by the future value factor for the specified number of periods and interest rate. For example, the future value factor for two periods at 9% is 1.18810. Multiplying this factor by $1,000 equals $1,188.10—which is the

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**TABLE 1** Future Value of 1

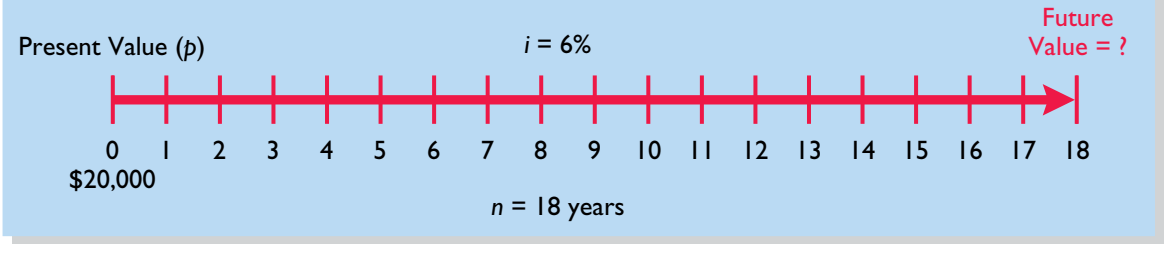
| (*n*) Periods | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 11% | 12% | 15% |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 |
| 1 | 1.04000 | 1.05000 | 1.06000 | 1.07000 | 1.08000 | 1.09000 | 1.10000 | 1.11000 | 1.12000 | 1.15000 |
| 2 | 1.08160 | 1.10250 | 1.12360 | 1.14490 | 1.16640 | 1.18810 | 1.21000 | 1.23210 | 1.25440 | 1.32250 |
| 3 | 1.12486 | 1.15763 | 1.19102 | 1.22504 | 1.25971 | 1.29503 | 1.33100 | 1.36763 | 1.40493 | 1.52088 |
| 4 | 1.16986 | 1.21551 | 1.26248 | 1.31080 | 1.36049 | 1.41158 | 1.46410 | 1.51807 | 1.57352 | 1.74901 |
| 5 | 1.21665 | 1.27628 | 1.33823 | 1.40255 | 1.46933 | 1.53862 | 1.61051 | 1.68506 | 1.76234 | 2.01136 |
| 6 | 1.26532 | 1.34010 | 1.41852 | 1.50073 | 1.58687 | 1.67710 | 1.77156 | 1.87041 | 1.97382 | 2.31306 |
| 7 | 1.31593 | 1.40710 | 1.50363 | 1.60578 | 1.71382 | 1.82804 | 1.94872 | 2.07616 | 2.21068 | 2.66002 |
| 8 | 1.36857 | 1.47746 | 1.59385 | 1.71819 | 1.85093 | 1.99256 | 2.14359 | 2.30454 | 2.47596 | 3.05902 |
| 9 | 1.42331 | 1.55133 | 1.68948 | 1.83846 | 1.99900 | 2.17189 | 2.35795 | 2.55803 | 2.77308 | 3.51788 |
| 10 | 1.48024 | 1.62889 | 1.79085 | 1.96715 | 2.15892 | 2.36736 | 2.59374 | 2.83942 | 3.10585 | 4.04556 |
| 11 | 1.53945 | 1.71034 | 1.89830 | 2.10485 | 2.33164 | 2.58043 | 2.85312 | 3.15176 | 3.47855 | 4.65239 |
| 12 | 1.60103 | 1.79586 | 2.01220 | 2.25219 | 2.51817 | 2.81267 | 3.13843 | 3.49845 | 3.89598 | 5.35025 |
| 13 | 1.66507 | 1.88565 | 2.13293 | 2.40985 | 2.71962 | 3.06581 | 3.45227 | 3.88328 | 4.36349 | 6.15279 |
| 14 | 1.73168 | 1.97993 | 2.26090 | 2.57853 | 2.93719 | 3.34173 | 3.79750 | 4.31044 | 4.88711 | 7.07571 |
| 15 | 1.80094 | 2.07893 | 2.39656 | 2.75903 | 3.17217 | 3.64248 | 4.17725 | 4.78459 | 5.47357 | 8.13706 |
| 16 | 1.87298 | 2.18287 | 2.54035 | 2.95216 | 3.42594 | 3.97031 | 4.59497 | 5.31089 | 6.13039 | 9.35762 |
| 17 | 1.94790 | 2.29202 | 2.69277 | 3.15882 | 3.70002 | 4.32763 | 5.05447 | 5.89509 | 6.86604 | 10.76126 |
| 18 | 2.02582 | 2.40662 | 2.85434 | 3.37993 | 3.99602 | 4.71712 | 5.55992 | 6.54355 | 7.68997 | 12.37545 |
| 19 | 2.10685 | 2.52695 | 3.02560 | 3.61653 | 4.31570 | 5.14166 | 6.11591 | 7.26334 | 8.61276 | 14.23177 |
| 20 | 2.19112 | 2.65330 | 3.20714 | 3.86968 | 4.66096 | 5.60441 | 6.72750 | 8.06231 | 9.64629 | 16.36654 |

accumulated balance at the end of year 2 in the Citizens Bank example in Illustration G.2. The $1,295.03 accumulated balance at the end of the third year is calculated from Table 1 by multiplying the future value factor for three periods (1.29503) by the $1,000.

The demonstration problem in **Illustration G.5** shows how to use Table 1.

**ILLUSTRATION G.5** Demonstration problem—Using Table 1 for *FV* of 1

John and Mary Rich invested $20,000 in a savings account paying 6% interest at the time their son, Mike, was born. The money is to be used by Mike for his college education. On his 18th birthday, Mike withdraws the money from his savings account. How much did Mike withdraw from his account?




**Answer:** The future value factor from Table 1 is 2.85434 (18 periods at 6%). The future value of $20,000 earning 6% per year for 18 years is **$57,086.80** ($20,000 × 2.85434).

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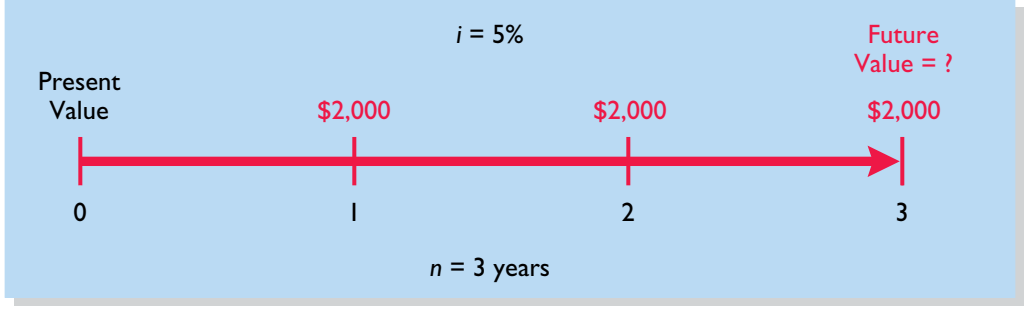
## Future Value of an Annuity

The preceding discussion involved the accumulation of only a single principal sum. Individuals and businesses frequently encounter situations in which a **series** of equal dollar amounts are to be paid or received at evenly spaced time intervals (periodically), such as loans or lease (rental) contracts. A series of payments or receipts of equal dollar amounts is referred to as an **annuity**.

The **future value of an annuity** is the sum of all the payments (receipts) plus the accumulated compound interest on them. In computing the future value of an annuity, it is necessary to know (1) the interest rate, (2) the number of payments (receipts), and (3) the amount of the periodic payments (receipts).

To illustrate the computation of the future value of an annuity, assume that you invest $2,000 at the end of each year for three years at 5% interest compounded annually. This situation is depicted in the time diagram in **Illustration G.6**.

**ILLUSTRATION G.6** **Time diagram for a three-year annuity**




The $2,000 invested at the end of year 1 will earn interest for two years (years 2 and 3), and the $2,000 invested at the end of year 2 will earn interest for one year (year 3). However, the last $2,000 investment (made at the end of year 3) will not earn any interest. Using the future value factors from Table 1, the future value of these periodic payments is computed as shown in **Illustration G.7**.

**ILLUSTRATION G.7**
**Future value of periodic payment computation**

| Invested at End of Year | Number of Compounding Periods | Amount Invested | × | Future Value of 1 Factor at 5% | = | Future Value |
|---|---|---|---|---|---|---|
| 1 | 2 | $2,000 | | 1.10250 | | $2,205 |
| 2 | 1 | 2,000 | | 1.05000 | | 2,100 |
| 3 | 0 | 2,000 | | 1.00000 | | 2,000 |
| | | | | 3.15250 | | $6,305 |

The first $2,000 investment is multiplied by the future value factor for two periods (1.1025) because two years' interest will accumulate on it (in years 2 and 3). The second $2,000 investment will earn only one year's interest (in year 3) and therefore is multiplied by the future value factor for one year (1.0500). The final $2,000 investment is made at the end of the third year and will not earn any interest. Thus, $n = 0$ and the future value factor is 1.00000. Consequently, the future value of the last $2,000 invested is only $2,000 since it does not accumulate any interest.

Calculating the future value of each individual cash flow is required when the periodic payments or receipts are not equal in each period. However, when the periodic payments (receipts) are **the same in each period**, the future value can be computed by using a future value of an annuity of 1 table. **Table 2** is such a table.

Table 2 shows the future value of 1 to be received periodically for a given number of payments. It assumes that each payment is made at the **end** of each period. We can see from Table 2

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**TABLE 2 Future Value of an Annuity of 1**

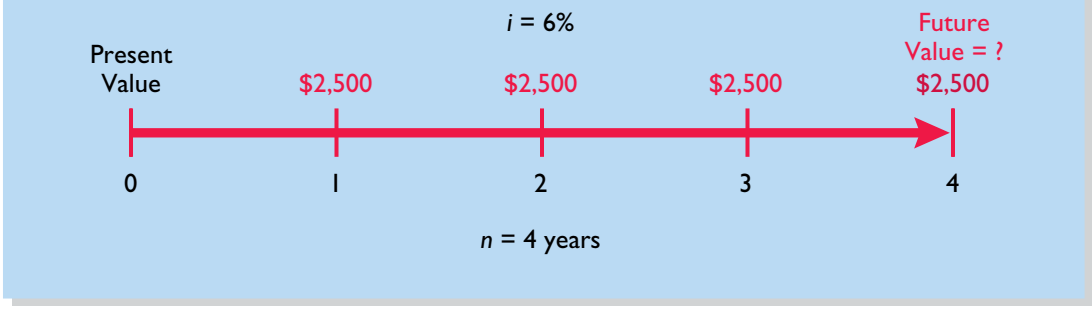
| (*n*) Payments | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 11% | 12% | 15% |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00000 | 1.00000 | 1.00000 | 1.0000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 |
| 2 | 2.04000 | 2.05000 | 2.06000 | 2.0700 | 2.08000 | 2.09000 | 2.10000 | 2.11000 | 2.12000 | 2.15000 |
| 3 | 3.12160 | 3.15250 | 3.18360 | 3.2149 | 3.24640 | 3.27810 | 3.31000 | 3.34210 | 3.37440 | 3.47250 |
| 4 | 4.24646 | 4.31013 | 4.37462 | 4.4399 | 4.50611 | 4.57313 | 4.64100 | 4.70973 | 4.77933 | 4.99338 |
| 5 | 5.41632 | 5.52563 | 5.63709 | 5.7507 | 5.86660 | 5.98471 | 6.10510 | 6.22780 | 6.35285 | 6.74238 |
| 6 | 6.63298 | 6.80191 | 6.97532 | 7.1533 | 7.33592 | 7.52334 | 7.71561 | 7.91286 | 8.11519 | 8.75374 |
| 7 | 7.89829 | 8.14201 | 8.39384 | 8.6540 | 8.92280 | 9.20044 | 9.48717 | 9.78327 | 10.08901 | 11.06680 |
| 8 | 9.21423 | 9.54911 | 9.89747 | 10.2598 | 10.63663 | 11.02847 | 11.43589 | 11.85943 | 12.29969 | 13.72682 |
| 9 | 10.58280 | 11.02656 | 11.49132 | 11.9780 | 12.48756 | 13.02104 | 13.57948 | 14.16397 | 14.77566 | 16.78584 |
| 10 | 12.00611 | 12.57789 | 13.18079 | 13.8164 | 14.48656 | 15.19293 | 15.93743 | 16.72201 | 17.54874 | 20.30372 |
| 11 | 13.48635 | 14.20679 | 14.97164 | 15.7836 | 16.64549 | 17.56029 | 18.53117 | 19.56143 | 20.65458 | 24.34928 |
| 12 | 15.02581 | 15.91713 | 16.86994 | 17.8885 | 18.97713 | 20.14072 | 21.38428 | 22.71319 | 24.13313 | 29.00167 |
| 13 | 16.62684 | 17.71298 | 18.88214 | 20.1406 | 21.49530 | 22.95339 | 24.52271 | 26.21164 | 28.02911 | 34.35192 |
| 14 | 18.29191 | 19.59863 | 21.01507 | 22.5505 | 24.21492 | 26.01919 | 27.97498 | 30.09492 | 32.39260 | 40.50471 |
| 15 | 20.02359 | 21.57856 | 23.27597 | 25.1290 | 27.15211 | 29.36092 | 31.77248 | 34.40536 | 37.27972 | 47.58041 |
| 16 | 21.82453 | 23.65749 | 25.67253 | 27.8881 | 30.32428 | 33.00340 | 35.94973 | 39.18995 | 42.75328 | 55.71747 |
| 17 | 23.69751 | 25.84037 | 28.21288 | 30.8402 | 33.75023 | 36.97351 | 40.54470 | 44.50084 | 48.88367 | 65.07509 |
| 18 | 25.64541 | 28.13238 | 30.90565 | 33.9990 | 37.45024 | 41.30134 | 45.59917 | 50.39593 | 55.74972 | 75.83636 |
| 19 | 27.67123 | 30.53900 | 33.75999 | 37.3790 | 41.44626 | 46.01846 | 51.15909 | 56.93949 | 63.43968 | 88.21181 |
| 20 | 29.77808 | 33.06595 | 36.78559 | 40.9955 | 45.76196 | 51.16012 | 57.27500 | 64.20283 | 72.05244 | 102.44358 |

that the future value of an annuity of 1 factor for three payments at 5% is 3.15250. The future value factor is the total of the three individual future value factors was shown in Illustration G.7. Multiplying this amount by the annual investment of $2,000 produces a future value of $6,305.

The demonstration problem in **Illustration G.8** shows how to use Table 2.

**ILLUSTRATION G.8 Demonstration problem—Using Table 2 for *FV* of an annuity of 1**

John and Char Lewis's daughter, Debra, has just started high school. They decide to start a college fund for her and will invest $2,500 in a savings account at the end of each year she is in high school (4 payments total). The account will earn 6% interest compounded annually. How much will be in the college fund at the time Debra graduates from high school?




**Answer:** The future value factor from Table 2 is 4.37462 (4 payments at 6%). The future value of $2,500 invested each year for 4 years at 6% interest is **$10,936.55** ($2,500 × 4.37462).

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# Present Values

**LEARNING OBJECTIVE 2**

Compute present values.

## Present Value Variables

The **present value** is the value now of a given amount to be paid or received in the future, assuming compound interest. The present value, like the future value, is based on three variables: (1) the dollar amount to be received (future amount), (2) the length of time until the amount is received (number of periods), and (3) the interest rate (the discount rate). The process of determining the present value is referred to as **discounting the future amount**.

Present value computations are used in measuring many items. For example, the present value of principal and interest payments is used to determine the market price of a bond. Determining the amount to be reported for notes payable and lease liabilities also involves present value computations. In addition, capital budgeting and other investment proposals are evaluated using present value computations. Finally, all rate of return and internal rate of return computations involve present value techniques.

## Present Value of a Single Amount

To illustrate present value, assume that you want to invest a sum of money today that will provide $1,000 at the end of one year. What amount would you need to invest today to have $1,000 one year from now? If you want a 10% rate of return, the investment or present value is $909.09 ($1,000 ÷ 1.10). The formula for calculating present value is shown in **Illustration G.9**.

**Present Value (*PV*) = Future Value (*FV*) ÷ $(1 + i)^n$**

**ILLUSTRATION G.9**
**Formula for present value**

The computation of $1,000 discounted at 10% for one year is as follows.

$$\begin{aligned} PV &= FV \div (1 + i)^n \\ &= \$1{,}000 \div (1 + .10)^1 \\ &= \$1{,}000 \div 1.10 \\ &= \$909.09 \end{aligned}$$

The future amount ($1,000), the discount rate (10%), and the number of periods (1) are known. The variables in this situation are depicted in the time diagram in **Illustration G.10**.

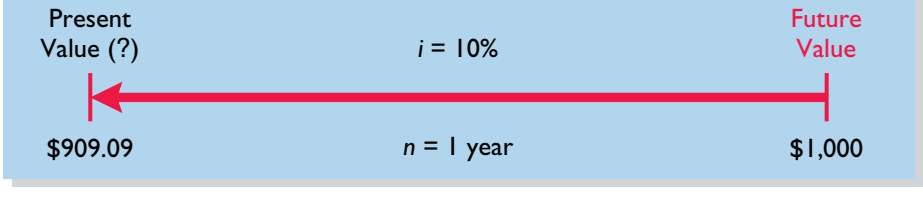


**ILLUSTRATION G.10**
**Finding present value if discounted for one period**

If the single amount of $1,000 is to be received **in two years** and discounted at 10%, the formula $PV = \$1{,}000 \div (1 + .10)^2$ is used, where $(1 + .10)^2$ is equal to 1.21 ($1.10 \times 1.10$). Its present value is $826.45 ($1,000 ÷ 1.21), depicted in **Illustration G.11**.

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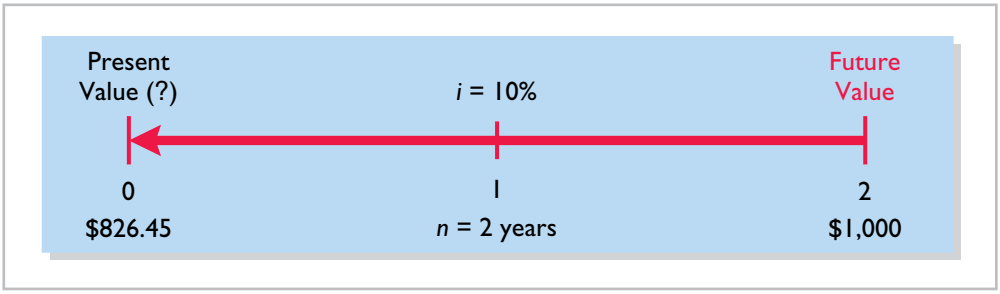
**ILLUSTRATION G.11**

**Finding present value if discounted for two periods**




The present value of 1 may also be determined through tables that show the present value of 1 for *n* periods. In **Table 3**, *n* is the number of discounting periods involved. The percentages are the periodic interest rates or discount rates, and the 5-digit decimal numbers in the respective columns are the present value of 1 factors.

When using Table 3, the future value is multiplied by the present value factor specified at the intersection of the number of periods and the discount rate.

**TABLE 3 Present Value of 1**

| (*n*) Periods | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 11% | 12% | 15% |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | .96154 | .95238 | .94340 | .93458 | .92593 | .91743 | .90909 | .90090 | .89286 | .86957 |
| 2 | .92456 | .90703 | .89000 | .87344 | .85734 | .84168 | .82645 | .81162 | .79719 | .75614 |
| 3 | .88900 | .86384 | .83962 | .81630 | .79383 | .77218 | .75132 | .73119 | .71178 | .65752 |
| 4 | .85480 | .82270 | .79209 | .76290 | .73503 | .70843 | .68301 | .65873 | .63552 | .57175 |
| 5 | .82193 | .78353 | .74726 | .71299 | .68058 | .64993 | .62092 | .59345 | .56743 | .49718 |
| 6 | .79031 | .74622 | .70496 | .66634 | .63017 | .59627 | .56447 | .53464 | .50663 | .43233 |
| 7 | .75992 | .71068 | .66506 | .62275 | .58349 | .54703 | .51316 | .48166 | .45235 | .37594 |
| 8 | .73069 | .67684 | .62741 | .58201 | .54027 | .50187 | .46651 | .43393 | .40388 | .32690 |
| 9 | .70259 | .64461 | .59190 | .54393 | .50025 | .46043 | .42410 | .39092 | .36061 | .28426 |
| 10 | .67556 | .61391 | .55839 | .50835 | .46319 | .42241 | .38554 | .35218 | .32197 | .24719 |
| 11 | .64958 | .58468 | .52679 | .47509 | .42888 | .38753 | .35049 | .31728 | .28748 | .21494 |
| 12 | .62460 | .55684 | .49697 | .44401 | .39711 | .35554 | .31863 | .28584 | .25668 | .18691 |
| 13 | .60057 | .53032 | .46884 | .41496 | .36770 | .32618 | .28966 | .25751 | .22917 | .16253 |
| 14 | .57748 | .50507 | .44230 | .38782 | .34046 | .29925 | .26333 | .23199 | .20462 | .14133 |
| 15 | .55526 | .48102 | .41727 | .36245 | .31524 | .27454 | .23939 | .20900 | .18270 | .12289 |
| 16 | .53391 | .45811 | .39365 | .33873 | .29189 | .25187 | .21763 | .18829 | .16312 | .10687 |
| 17 | .51337 | .43630 | .37136 | .31657 | .27027 | .23107 | .19785 | .16963 | .14564 | .09293 |
| 18 | .49363 | .41552 | .35034 | .29586 | .25025 | .21199 | .17986 | .15282 | .13004 | .08081 |
| 19 | .47464 | .39573 | .33051 | .27615 | .23171 | .19449 | .16351 | .13768 | .11611 | .07027 |
| 20 | .45639 | .37689 | .31180 | .25842 | .21455 | .17843 | .14864 | .12403 | .10367 | .06110 |

For example, the present value factor for one period at a discount rate of 10% is .90909, which is the value used to compute $909.09 ($1,000 × .90909) in Illustration G.10. For two periods at a discount rate of 10%, the present value factor is .82645, which is the value used to compute $826.45 ($1,000 × .82645) in Illustration G.11.

Note that a higher discount rate produces a smaller present value. For example, using a 15% discount rate, the present value of $1,000 due one year from now is $869.57 ($1,000 × .86957), versus $909.09 at 10%. Also note that the further in the future that the future value is, the smaller the present value. For example, using the same discount rate of 10%, the present value of $1,000 due in **five years** at 10% is $620.92 ($1,000 × .62092). The present value of $1,000 due in **one year** is $909.09, a difference of $288.17.

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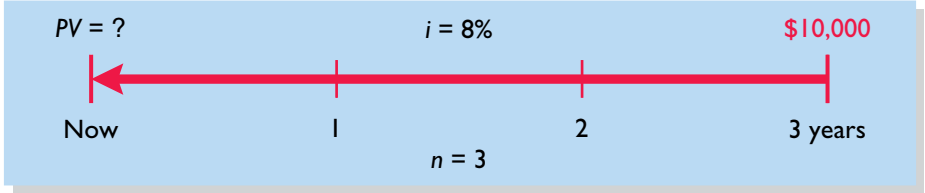
The following two demonstration problems (**Illustrations G.12** and **G.13**) illustrate how to use Table 3.

**ILLUSTRATION G.12**

**Demonstration problem—Using Table 3 for *PV* of 1**

Suppose you have a winning lottery ticket and the state gives you the option of taking $10,000 3 years from now or taking the present value of $10,000 now. The state uses an 8% rate in discounting. How much will you receive if you accept your winnings now?

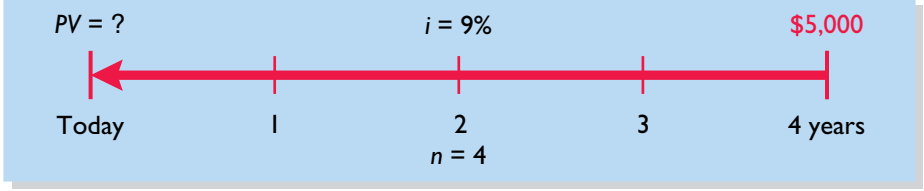



**Answer:** The present value factor from Table 3 is .79383 (3 periods at 8%). The present value of $10,000 to be received in 3 years discounted at 8% is **$7,938.30** ($10,000 × .79383).

**ILLUSTRATION G.13**

**Demonstration problem—Using Table 3 for *PV* of 1**

Determine the amount you must deposit today in your super savings account, paying 9% interest, in order to accumulate $5,000 for a down payment 4 years from now on a new car.




**Answer:** The present value factor from Table 3 is .70843 (4 periods at 9%). The present value of $5,000 to be received in 4 years discounted at 9% is **$3,542.15** ($5,000 × .70843).

## Present Value of an Annuity

The preceding discussion involved the discounting of only a single future amount. Businesses and individuals frequently engage in transactions in which a series of equal dollar amounts are to be received or paid at evenly spaced time intervals (periodically). Examples of a series of periodic receipts or payments are loan agreements, installment sales, mortgage notes, lease (rental) contracts, and pension obligations. As discussed earlier, these periodic receipts or payments are **annuities**.

The **present value of an annuity** is the value now of a series of future receipts or payments, discounted assuming compound interest. In computing the present value of an annuity, it is necessary to know (1) the discount rate, (2) the number of payments (receipts), and (3) the amount of the periodic receipts or payments. To illustrate the computation of the present value of an annuity, assume that you will receive $1,000 cash annually for three years

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at a time when the discount rate is 10%. This situation is depicted in the time diagram in Illustration G.14. Illustration G.15 shows the computation of its present value in this situation.

**ILLUSTRATION G.14**

**Time diagram for a three-year annuity**

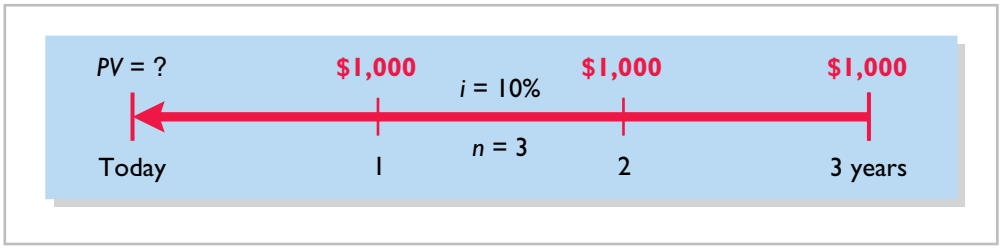


**ILLUSTRATION G.15**

**Present value of a series of future amounts computation**

| Future Amount | × | Present Value of 1 Factor at 10% | = | Present Value |
|---|---|---|---|---|
| $1,000 (1 year away) | | .90909 | | $ 909.09 |
| 1,000 (2 years away) | | .82645 | | 826.45 |
| 1,000 (3 years away) | | .75132 | | 751.32 |
| | | 2.48686 | | $2,486.86 |

This method of calculation is required when the periodic cash flows are not uniform in each period. However, when the future receipts are the same in each period, an annuity table can be used. As illustrated in Table 4, an annuity table shows the present value of 1 to be received periodically for a given number of payments. It assumes that each payment is made at the end of each period.

**TABLE 4 Present Value of an Annuity of 1**

| (*n*) Payments | 4% | 5% | 6% | 7% | 8% | 9% | 10% | 11% | 12% | 15% |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | .96154 | .95238 | .94340 | .93458 | .92593 | .91743 | .90909 | .90090 | .89286 | .86957 |
| 2 | 1.88609 | 1.85941 | 1.83339 | 1.80802 | 1.78326 | 1.75911 | 1.73554 | 1.71252 | 1.69005 | 1.62571 |
| 3 | 2.77509 | 2.72325 | 2.67301 | 2.62432 | 2.57710 | 2.53130 | 2.48685 | 2.44371 | 2.40183 | 2.28323 |
| 4 | 3.62990 | 3.54595 | 3.46511 | 3.38721 | 3.31213 | 3.23972 | 3.16986 | 3.10245 | 3.03735 | 2.85498 |
| 5 | 4.45182 | 4.32948 | 4.21236 | 4.10020 | 3.99271 | 3.88965 | 3.79079 | 3.69590 | 3.60478 | 3.35216 |
| 6 | 5.24214 | 5.07569 | 4.91732 | 4.76654 | 4.62288 | 4.48592 | 4.35526 | 4.23054 | 4.11141 | 3.78448 |
| 7 | 6.00205 | 5.78637 | 5.58238 | 5.38929 | 5.20637 | 5.03295 | 4.86842 | 4.71220 | 4.56376 | 4.16042 |
| 8 | 6.73274 | 6.46321 | 6.20979 | 5.97130 | 5.74664 | 5.53482 | 5.33493 | 5.14612 | 4.96764 | 4.48732 |
| 9 | 7.43533 | 7.10782 | 6.80169 | 6.51523 | 6.24689 | 5.99525 | 5.75902 | 5.53705 | 5.32825 | 4.77158 |
| 10 | 8.11090 | 7.72173 | 7.36009 | 7.02358 | 6.71008 | 6.41766 | 6.14457 | 5.88923 | 5.65022 | 5.01877 |
| 11 | 8.76048 | 8.30641 | 7.88687 | 7.49867 | 7.13896 | 6.80519 | 6.49506 | 6.20652 | 5.93770 | 5.23371 |
| 12 | 9.38507 | 8.86325 | 8.38384 | 7.94269 | 7.53608 | 7.16073 | 6.81369 | 6.49236 | 6.19437 | 5.42062 |
| 13 | 9.98565 | 9.39357 | 8.85268 | 8.35765 | 7.90378 | 7.48690 | 7.10336 | 6.74987 | 6.42355 | 5.58315 |
| 14 | 10.56312 | 9.89864 | 9.29498 | 8.74547 | 8.24424 | 7.78615 | 7.36669 | 6.98187 | 6.62817 | 5.72448 |
| 15 | 11.11839 | 10.37966 | 9.71225 | 9.10791 | 8.55948 | 8.06069 | 7.60608 | 7.19087 | 6.81086 | 5.84737 |
| 16 | 11.65230 | 10.83777 | 10.10590 | 9.44665 | 8.85137 | 8.31256 | 7.82371 | 7.37916 | 6.97399 | 5.95424 |
| 17 | 12.16567 | 11.27407 | 10.47726 | 9.76322 | 9.12164 | 8.54363 | 8.02155 | 7.54879 | 7.11963 | 6.04716 |
| 18 | 12.65930 | 11.68959 | 10.82760 | 10.05909 | 9.37189 | 8.75563 | 8.20141 | 7.70162 | 7.24967 | 6.12797 |
| 19 | 13.13394 | 12.08532 | 11.15812 | 10.33560 | 9.60360 | 8.95012 | 8.36492 | 7.83929 | 7.36578 | 6.19823 |
| 20 | 13.59033 | 12.46221 | 11.46992 | 10.59401 | 9.81815 | 9.12855 | 8.51356 | 7.96333 | 7.46944 | 6.25933 |

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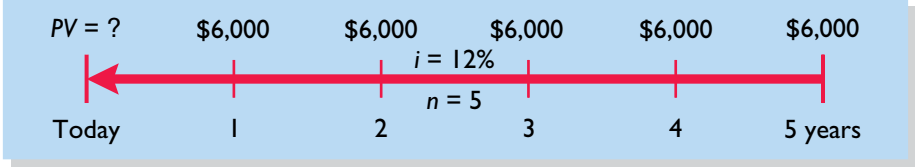
Table 4 shows that the present value of an annuity of 1 factor for three payments at 10% is 2.48685.[1] This present value factor is the total of the three individual present value factors, as shown in Illustration G.15. Applying this amount to the annual cash flow of $1,000 produces a present value of $2,486.85.

The following demonstration problem (**Illustration G.16**) illustrates how to use Table 4.

**ILLUSTRATION G.16**

**Demonstration problem—Using Table 4 for *PV* of an annuity of 1**

Kildare Company has just signed a capitalizable lease contract for equipment that requires rental payments of $6,000 each, to be paid at the end of each of the next 5 years. The appropriate discount rate is 12%. What is the present value of the rental payments—that is, the amount used to capitalize the leased equipment?




**Answer:** The present value factor from Table 4 is 3.60478 (5 payments at 12%). The present value of 5 payments of $6,000 each discounted at 12% is **$21,628.68** ($6,000 × 3.60478).

## Time Periods and Discounting

In the preceding calculations, the discounting was done on an annual basis using an annual interest rate. Discounting may also be done over shorter periods of time such as monthly, quarterly, or semiannually.

When the time frame is less than one year, it is necessary to convert the annual interest rate to the applicable time frame. Assume, for example, that the investor in Illustration G.14 received $500 **semiannually** for three years instead of $1,000 annually. In this case, the number of periods becomes six (3 × 2), the discount rate is 5% (10% ÷ 2), the present value factor from Table 4 is 5.07569 (6 periods at 5%), and the present value of the future cash flows is $2,537.85 (5.07569 × $500). This amount is slightly higher than the $2,486.86 computed in Illustration G.15 because interest is computed twice during the same year. That is, during the second half of the year, interest is earned on the first half-year's interest.

## Present Value of a Long-Term Note or Bond

The present value (or market price) of a long-term note or bond is a function of three variables: (1) the payment amounts, (2) the length of time until the amounts are paid, and (3) the discount rate. Our example uses a five-year bond issue.

The first variable (dollars to be paid) is made up of two elements: (1) a series of interest payments (an annuity) and (2) the principal amount (a single sum). To compute the present

[1]The difference of .00001 between 2.48686 and 2.48685 is due to rounding.

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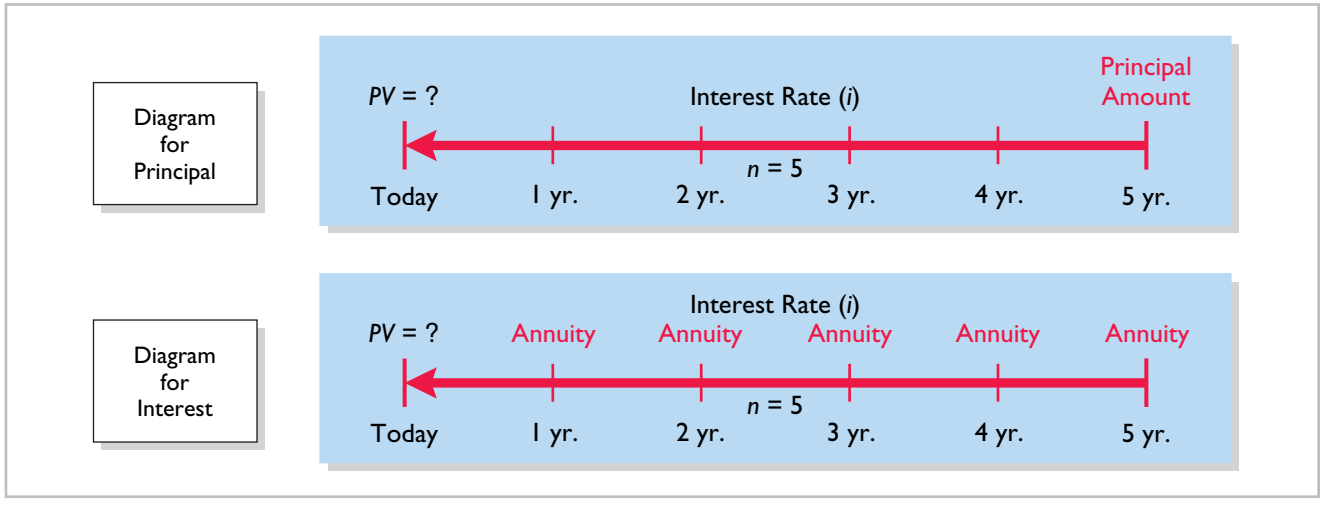
value of the bond, both the interest payments and the principal amount must be discounted—two different computations. The time diagrams for a bond due in five years are shown in **Illustration G.17**.

**ILLUSTRATION G.17** **Time diagrams for the present value of a bond**




When the investor's market interest rate is equal to the bond's contractual interest rate, the present value of the bonds will equal the face value of the bonds. To illustrate, assume a bond issue of 5%, 10-year bonds with a face value of $100,000 with interest payable **annually** on January 1. If the discount rate is the same as the contractual rate, the bonds will sell at face value. In this case, the investor will receive (1) $100,000 at maturity and (2) a series of ten $5,000 interest payments ($100,000 × 5%) over the term of the bonds. The length of time is expressed in terms of interest periods—in this case—10, and the discount rate per interest period, 5%. The time diagram in **Illustration G.18** depicts the variables involved in this discounting situation.

**ILLUSTRATION G.18** **Time diagram for present value of a 5%, 10-year bond paying interest annually**

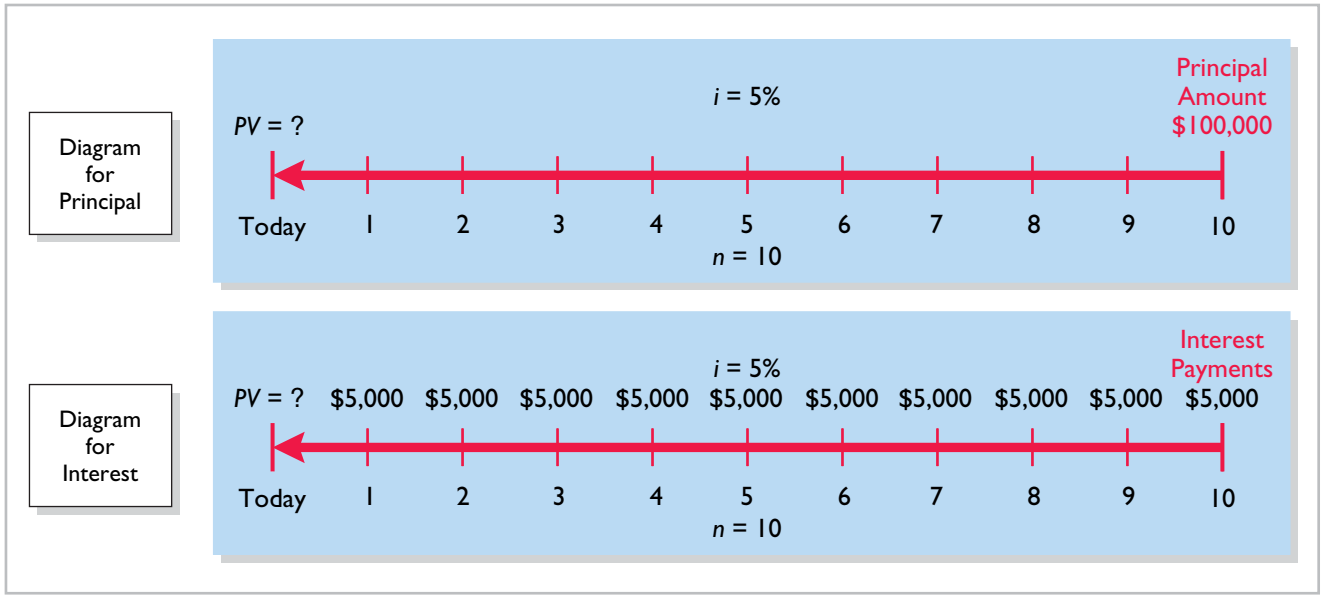


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**Illustration G.19** shows the computation of the present value of these bonds.

**ILLUSTRATION G.19**
**Present value of principal and interest—face value**

| 5% Contractual Rate—5% Discount Rate | |
|---|---|
| **Present value of principal to be received at maturity** | |
| $100,000 × *PV* of 1 due in 10 periods at 5% | |
| $100,000 × .61391 (Table 3) | $ 61,391 |
| **Present value of interest to be received periodically over the term of the bonds** | |
| $5,000 × *PV* of 1 due periodically for 10 periods at 5% | |
| $5,000 × 7.72173 (Table 4) | 38,609* |
| **Present value of bonds** | **$100,000** |

*Rounded

Now assume that the investor's required rate of return is 6%, not 5%. The future amounts are again $100,000 and $5,000, respectively, but now a discount rate of 6% must be used. The present value of the bonds is $92,639, as computed in **Illustration G.20**.

**ILLUSTRATION G.20**
**Present value of principal and interest—discount**

| 5% Contractual Rate—6% Discount Rate | |
|---|---|
| **Present value of principal to be received at maturity** | |
| $100,000 × .55839 (Table 3) | $55,839 |
| **Present value of interest to be received periodically over the term of the bonds** | |
| $5,000 × 7.36009 (Table 4) | 36,800 |
| **Present value of bonds** | **$92,639** |

Conversely, if the discount rate is 4% and the contractual rate is 5%, the present value of the bonds is $108,111, computed as shown in **Illustration G.21**.

**ILLUSTRATION G.21**
**Present value of principal and interest—premium**

| 5% Contractual Rate—4% Discount Rate | |
|---|---|
| **Present value of principal to be received at maturity** | |
| $100,000 × .67556 (Table 3) | $ 67,556 |
| **Present value of interest to be received periodically over the term of the bonds** | |
| $5,000 × 8.11090 (Table 4) | 40,555* |
| **Present value of bonds** | **$108,111** |

*Rounded

The above discussion relied on present value tables in solving present value problems. Calculators may also be used to compute present values without the use of these tables. Many calculators, especially financial calculators, have present value (*PV*) functions that allow you to calculate present values by merely inputting the proper amount, discount rate, periods, and pressing the PV key. We discuss the use of financial calculators in a later section.

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# Capital Budgeting Situations

**LEARNING OBJECTIVE 3**

Compute the present value in capital budgeting situations.

The decision to make long-term capital investments is best evaluated using discounting techniques that recognize the time value of money. To do this, many companies calculate the present value of the cash flows involved in a capital investment.

To illustrate, Nagel-Siebert Trucking Company, a cross-country freight carrier in Montgomery, Illinois, is considering adding another truck to its fleet because of a purchasing opportunity. **Navistar Inc.**, Nagel-Siebert's primary supplier of overland rigs, is overstocked and offers to sell its biggest rig for $154,000 cash payable upon delivery. Nagel-Siebert knows that the rig will produce a net cash flow per year of $40,000 for five years (received at the end of each year), at which time it will be sold for an estimated salvage value of $35,000. Nagel-Siebert's discount rate in evaluating capital expenditures is 10%. Should Nagel-Siebert commit to the purchase of this rig?

The cash flows that must be discounted to present value by Nagel-Siebert are as follows.

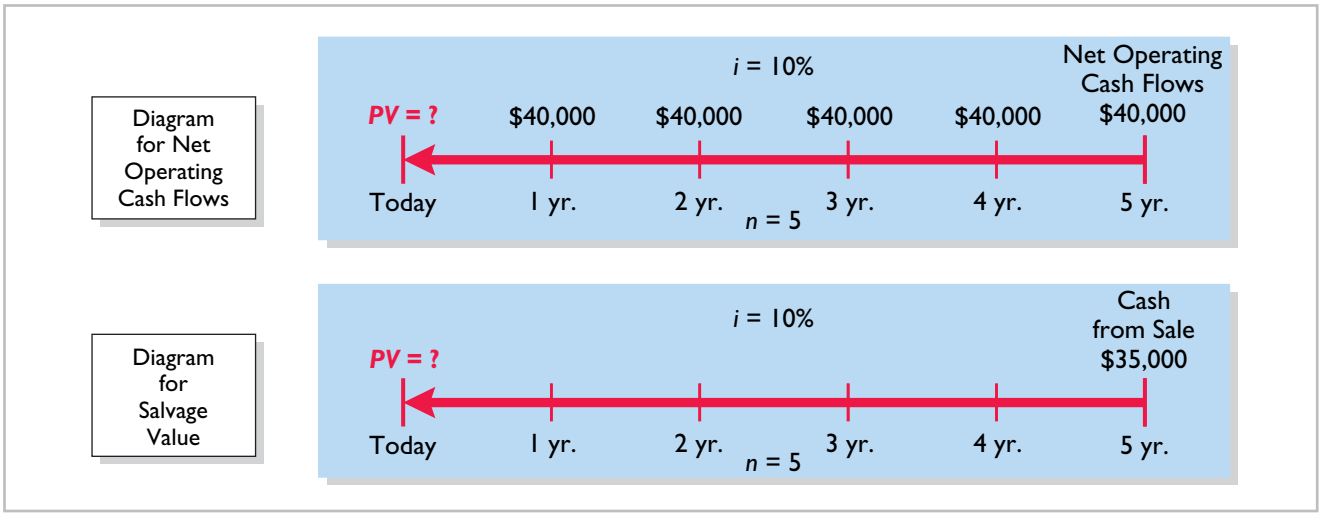
Cash payable on delivery (today): $154,000.

Net cash flow from operating the rig: $40,000 for 5 years (at the end of each year).

Cash received from sale of rig at the end of 5 years: $35,000.

The time diagrams for the latter two cash flows are shown in **Illustration G.22**.

**ILLUSTRATION G.22** **Time diagrams for Nagel-Siebert Trucking Company**




Notice from the diagrams that computing the present value of the net operating cash flows ($40,000 at the end of each year) is **discounting an annuity** (Table 4), while computing the present value of the $35,000 salvage value is **discounting a single sum** (Table 3). The computation of these present values is shown in **Illustration G.23**.

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**ILLUSTRATION G.23**
**Present value computations at 10%**

| Present Values Using a 10% Discount Rate | |
|---|---|
| Present value of net operating cash flows received annually over 5 years | |
| $40,000 × PV of 1 received annually for 5 years at 10% | |
| $40,000 × 3.79079 | $ 151,631.60 |
| Present value of salvage value (cash) to be received in 5 years | |
| $35,000 × PV of 1 received in 5 years at 10% | |
| $35,000 × .62092 | 21,732.20 |
| Present value of cash **inflows** | 173,363.80 |
| Present value of cash **outflows** (purchase price due today at 10%) | |
| $154,000 × PV of 1 due today | |
| $154,000 × 1.00000 | (154,000.00) |
| Net present value | **$ 19,363.80** |

Because the present value of the cash receipts (inflows) of $173,363.80 ($151,631.60 + $21,732.20) exceeds the present value of the cash payments (outflows) of $154,000.00, the net present value of $19,363.80 is positive, and **the decision to invest should be accepted**.

Now assume that Nagel-Siebert uses a discount rate of 15%, not 10%, because it wants a greater return on its investments in capital assets. The cash receipts and cash payments by Nagel-Siebert are the same. The present values of these receipts and cash payments discounted at 15% are shown in **Illustration G.24**.

**ILLUSTRATION G.24**
**Present value computations at 15%**

| Present Values Using a 15% Discount Rate | |
|---|---|
| Present value of net operating cash flows received annually over 5 years at 15% | |
| $40,000 × 3.35216 | $ 134,086.40 |
| Present value of salvage value (cash) to be received in 5 years at 15% | |
| $35,000 × .49718 | 17,401.30 |
| Present value of cash **inflows** | $ 151,487.70 |
| Present value of cash **outflows** (purchase price due today at 15%) | |
| $154,000 × 1.00000 | (154,000.00) |
| Net present value | **$ (2,512.30)** |

Because the present value of the cash payments (outflows) of $154,000.00 exceeds the present value of the cash receipts (inflows) of $151,487.70 ($134,086.40 + $17,401.30), the net present value of $2,512.30 is negative, and **the investment should be rejected**.

The above discussion relied on present value tables in solving present value problems. As we show in the next section, calculators may also be used to compute present values without the use of these tables. Financial calculators have present value (PV) functions that allow you to calculate present values by merely identifying the proper amount, discount rate, periods, and pressing the PV key.

# Using Financial Calculators

**LEARNING OBJECTIVE 4**

Use a financial calculator to solve time value of money problems.

Business professionals, once they have mastered the underlying time value of money concepts, often use a financial calculator to solve these types of problems. To use financial

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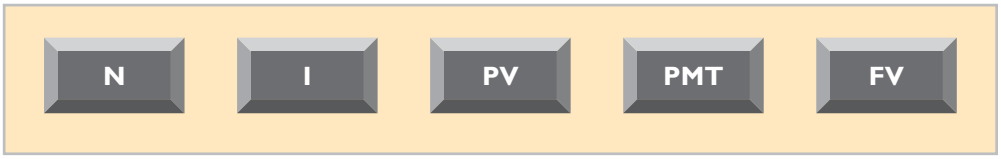
calculators, you enter the time value of money variables into the calculator. Illustration G.25 shows the five most common keys used to solve time value of money problems.[2]

**ILLUSTRATION G.25**
**Financial calculator keys**




where:

| | | |
|---|---|---|
| N | = | number of periods |
| I | = | interest rate per period (some calculators use I/YR or i) |
| PV | = | present value (occurs at the beginning of the first period) |
| PMT | = | payment (all payments are equal, and none are skipped) |
| FV | = | future value (occurs at the end of the last period) |

In solving time value of money problems in this appendix, you will generally be given three of four variables and will have to solve for the remaining variable. The fifth key (the key not used) is given a value of zero to ensure that this variable is not used in the computation.

## Present Value of a Single Sum

To illustrate how to solve a present value problem using a financial calculator, assume that you want to know the present value of $84,253 to be received in five years, discounted at 11% compounded annually. Illustration G.26 depicts this problem.

**ILLUSTRATION G.26**
**Calculator solution for present value of a single sum**

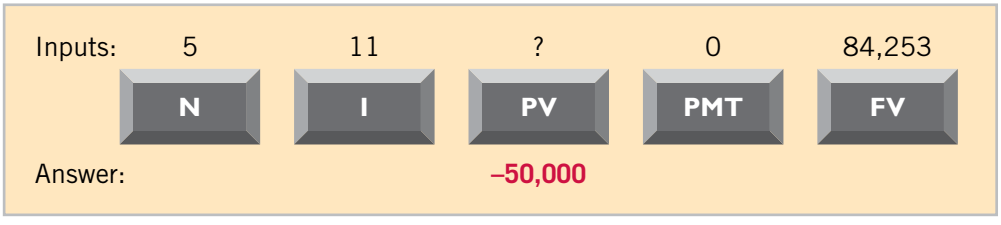



Illustration G.26 shows you the information (inputs) to enter into the calculator: N = 5, I = 11, PMT = 0, and FV = 84,253. You then press PV for the answer: −$50,000. As indicated, the PMT key was given a value of zero because a series of payments did not occur in this problem.

### Plus and Minus

The use of plus and minus signs in time value of money problems with a financial calculator can be confusing. Most financial calculators are programmed so that the positive and negative cash flows in any problem offset each other. In the present value problem above, we identified the $84,253 future value initial investment as a positive (inflow); the answer −$50,000 was shown as a negative amount, reflecting a cash outflow. If the 84,253 were entered as a negative, then the final answer would have been reported as a positive 50,000.

Hopefully, the sign convention will not cause confusion. If you understand what is required in a problem, you should be able to interpret a positive or negative amount in determining the solution to a problem.

### Compounding Periods

In the problem above, we assumed that compounding occurs once a year. Some financial calculators have a default setting, which assumes that compounding occurs 12 times a year. You must determine what default period has been programmed into your calculator and change it as necessary to arrive at the proper compounding period.

[2]On many calculators, these keys are actual buttons on the face of the calculator; on others, they appear on the display after the user accesses a present value menu.

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### Rounding

Most financial calculators store and calculate using 12 decimal places. As a result, because compound interest tables generally have factors only up to five decimal places, a slight difference in the final answer can result. In most time value of money problems, the final answer will not include more than two decimal places.

## Present Value of an Annuity

To illustrate how to solve a present value of an annuity problem using a financial calculator, assume that you are asked to determine the present value of rental receipts of $6,000 each to be received at the end of each of the next five years, when discounted at 12%, as pictured in **Illustration G.27**.

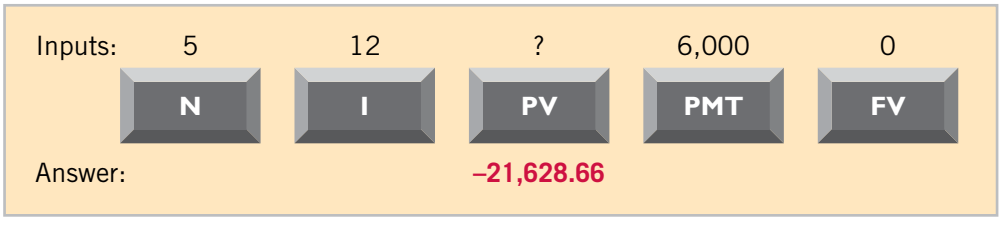


**ILLUSTRATION G.27**
**Calculator solution for present value of an annuity**

In this case, you enter N = 5, I = 12, PMT = 6,000, FV = 0, and then press PV to arrive at the answer of −$21,628.66.

## Future Value of a Single Sum

Now let us look at an investment to illustrate how to solve a future value problem using a financial calculator. Assume that you will invest $20,000 today into a fund and you intend to leave it there for 15 years. The fund earns 7% interest. **Illustration G.28** shows how to compute the future value of the fund at the end of year 15.

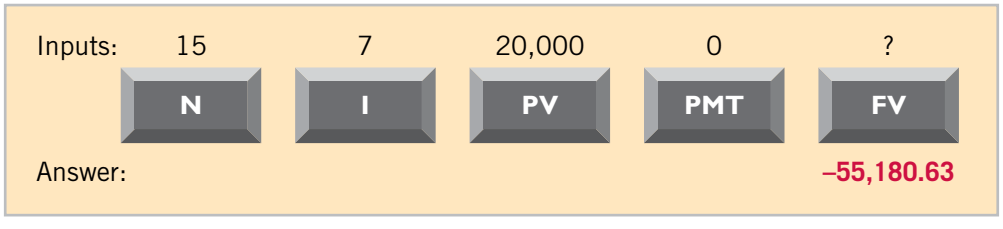


**ILLUSTRATION G.28**
**Calculator solution for future value of single sum**

In this case, you enter N = 15, I = 7, PV = 20,000, PMT = 0, and then press FV to calculate the future value of −$55,180.63.

## Future Value of an Annuity

You can use a financial calculator to solve a future value of an annuity problem for an annuity investment. Assume that you will invest $8,000 into a fund at the end of each of the next eight years. The fund earns 9% interest. **Illustration G.29** shows how to compute the future value of the fund at the end of the eighth year.

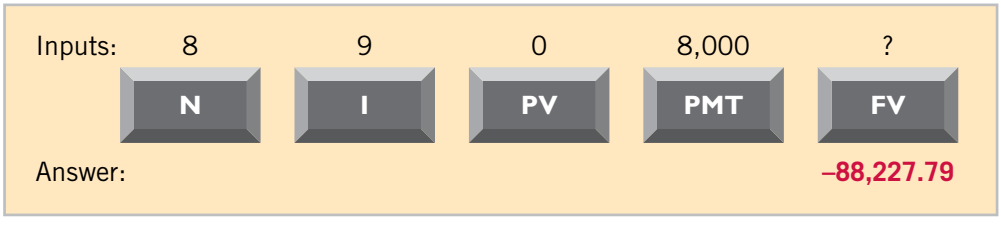


**ILLUSTRATION G.29**
**Calculator solution for future value of an annuity**

In this case, you enter N = 8, I = 9, PV = 0, PMT = 8,000, and then press FV to determine the future value of −$88,227.79.

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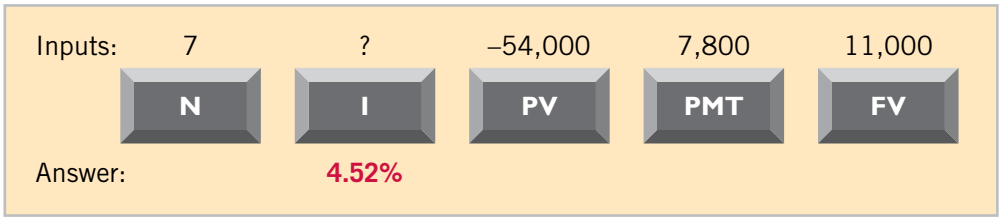
## Internal Rate of Return

You can also use these same calculator keys to compute the internal rate of return of an investment that has equal cash flows. Suppose that a purchase of a piece of equipment with a seven-year life requires an initial investment of $54,000, has positive cash flows of $7,800 per year, and has an estimated salvage value of $11,000. The computation is shown in **Illustration G.30**.

**ILLUSTRATION G.30**
**Calculator solution for internal rate of return**




In this case, you enter N = 7, PV = −54,000 (we entered as a negative, since it is an outflow), PMT = 7,800, FV = 11,000, and then press FV to determine the answer of 4.52%. Notice that the advantage to this approach is that you arrive at a much more precise result, rather than the rough approximation provided by the present value tables. To determine the internal rate of return using your calculator for an investment with unequal cash flows, you need to employ the cash flow key (CF) and the internal rate of return key (IRR). The use of these function keys varies across calculators, so you should consult the user manual for your calculator or the manufacturer's website for specific information.

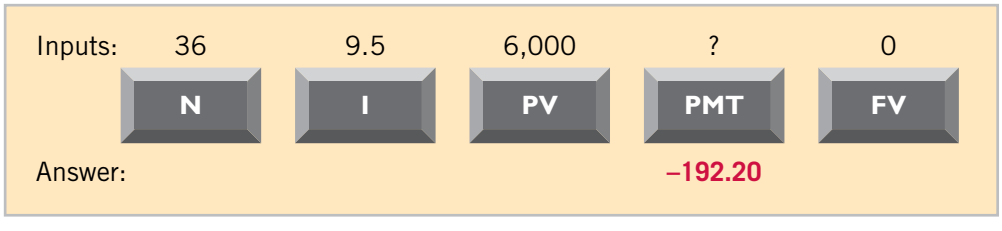
## Useful Applications of the Financial Calculator

With a financial calculator, you can solve for any interest rate or for any number of periods in a time value of money problem. Here are some examples of these applications.

### Auto Loan

Assume you are financing the purchase of a used car with a three-year loan. The loan has a 9.5% stated annual interest rate, compounded monthly. The price of the car is $6,000, and you want to determine the monthly payments, assuming that the payments start one month after the purchase. This problem is pictured in **Illustration G.31**.

**ILLUSTRATION G.31**
**Calculator solution for auto loan payments**




To solve this problem, you enter N = 36 (12 × 3), I = 9.5, PV = 6,000, FV = 0, and then press PMT. You will find that the monthly payments will be $192.20. Note that the payment key is usually programmed for 12 payments per year. Thus, you must change the default (compounding period) if the payments are other than monthly.

### Mortgage Loan Amount

Say you are evaluating financing options for a loan on a house (a mortgage). You decide that the maximum mortgage payment you can afford is $700 per month. The annual interest rate is 8.4%. If you get a mortgage that requires you to make monthly payments over a 15-year period, what is the maximum home loan you can afford? **Illustration G.32** depicts this problem.

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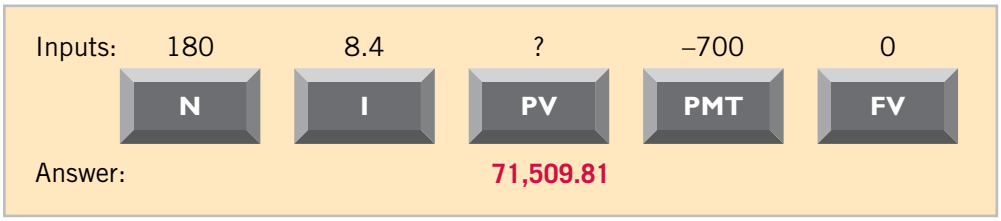


**ILLUSTRATION G.32**

**Calculator solution for mortgage amount**

You enter N = 180 (12 × 15 years), I = 8.4, PMT = −700, FV = 0, and then press PV. With the payments-per-year key set at 12, you find a present value of $71,509.81—the maximum home loan you can afford, given that you want to keep your mortgage payments at $700. Note that by changing any of the variables, you can quickly conduct "what-if" analyses for different situations.

# Review

## Learning Objectives Review

### 1 Compute interest and future values.

Simple interest is computed on the principal only, while compound interest is computed on the principal and any interest earned that has not been withdrawn.

To solve for future value of a single amount, prepare a time diagram of the problem. Identify the principal amount, the number of compounding periods, and the interest rate. Using the future value of 1 table, multiply the principal amount by the future value factor specified at the intersection of the number of periods and the interest rate.

To solve for future value of an annuity, prepare a time diagram of the problem. Identify the amount of the periodic payments (receipts), the number of payments (receipts), and the interest rate. Using the future value of an annuity of 1 table, multiply the amount of the payments by the future value factor specified at the intersection of the number of periods and the interest rate.

### 2 Compute present values.

The following three variables are fundamental to solving present value problems: (1) the future amount, (2) the number of periods, and (3) the interest rate (the discount rate).

To solve for present value of a single amount, prepare a time diagram of the problem. Identify the future amount, the number of discounting periods, and the discount (interest) rate. Using the present value of a single amount table, multiply the future amount by the present value factor specified at the intersection of the number of periods and the discount rate.

To solve for present value of an annuity, prepare a time diagram of the problem. Identify the amount of future periodic receipts or payments (annuities), the number of payments (receipts), and the discount (interest) rate. Using the present value of an annuity of 1 table, multiply the amount of the annuity by the present value factor specified at the intersection of the number of payments and the interest rate.

To compute the present value of notes and bonds, determine the present value of the principal amount and the present value of the interest payments. Multiply the principal amount (a single future amount) by the present value factor (from the present value of 1 table) intersecting at the number of periods (number of interest payments) and the discount rate. To determine the present value of the series of interest payments, multiply the amount of the interest payment by the present value factor (from the present value of an annuity of 1 table) intersecting at the number of periods (number of interest payments) and the discount rate. Add the present value of the principal amount to the present value of the interest payments to arrive at the present value of the note or bond.

### 3 Compute the present value in capital budgeting situations.

Compute the present values of all cash inflows and all cash outflows related to the capital budgeting proposal (an investment-type decision). If the **net** present value is positive, accept the proposal (make the investment). If the **net** present value is negative, reject the proposal (do not make the investment).

### 4 Use a financial calculator to solve time value of money problems.

Financial calculators can be used to solve the same and additional problems as those solved with time value of money tables. Enter into the financial calculator the amounts for all of the known elements of a time value of money problem (periods, interest rate, payments, future or present value), and it solves for the unknown element. Particularly useful situations involve interest rates and compounding periods not presented in the tables.

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## Glossary Review

**Annuity** A series of equal dollar amounts to be paid or received at evenly spaced time intervals (periodically). (p. G-5).

**Compound interest** The interest computed on the principal and any interest earned that has not been paid or withdrawn. (p. G-2).

**Discounting the future amount(s)** The process of determining present value. (p. G-7).

**Future value of an annuity** The sum of all the payments (receipts) plus the accumulated compound interest on them. (p. G-5).

**Future value of a single amount** The value at a future date of a given amount invested, assuming compound interest. (p. G-3).

**Interest** Payment for the use of another person's money. (p. G-1).

**Present value** The value now of a given amount to be paid or received in the future, assuming compound interest. (p. G-7).

**Present value of an annuity** The value now of a series of future receipts or payments, discounted assuming compound interest. (p. G-9).

**Principal** The amount borrowed or invested. (p. G-1).

**Simple interest** The interest computed on the principal only. (p. G-2).

## WileyPLUS

Many additional resources are available for practice in WileyPLUS.

## Brief Exercises

**(Use tables to solve exercises BEG.1 to BEG.23.)**

*Compute the future value of a single amount.*

**BEG.1 (LO 1)** Jozy Altidore invested $6,000 at 5% annual interest, and left the money invested without withdrawing any of the interest for 12 years. At the end of the 12 years, Jozy withdrew the accumulated amount of money. (a) What amount did Jozy withdraw, assuming the investment earns simple interest? (b) What amount did Jozy withdraw, assuming the investment earns interest compounded annually?

*Use future value tables.*

**BEG.2 (LO 1)** For each of the following cases, indicate (a) what interest rate columns and (b) what number of periods you would refer to in looking up the future value factor.

1. In Table 1 (future value of 1):

| | Annual Rate | Number of Years Invested | Compounded |
|---|---|---|---|
| Case A | 5% | 3 | Annually |
| Case B | 12% | 4 | Semiannually |

2. In Table 2 (future value of an annuity of 1):

| | Annual Rate | Number of Years Invested | Compounded |
|---|---|---|---|
| Case A | 3% | 8 | Annually |
| Case B | 8% | 6 | Semiannually |

*Compute the future value of a single amount.*

**BEG.3 (LO 1)** Liam Company signed a lease for an office building for a period of 12 years. Under the lease agreement, a security deposit of $9,600 is made. The deposit will be returned at the expiration of the lease with interest compounded at 4% per year. What amount will Liam receive at the time the lease expires?

*Compute the future value of an annuity.*

**BEG.4 (LO 1)** Bates Company issued $1,000,000, 10-year bonds. It agreed to make annual deposits of $78,000 to a fund (called a sinking fund), which will be used to pay off the principal amount of the bond at the end of 10 years. The deposits are made at the end of each year into an account paying 6% annual interest. What amount will be in the sinking fund at the end of 10 years?

*Compute the future value of a single amount and of an annuity.*

**BEG.5 (LO 1)** Andrew and Emma Garfield invested $8,000 in a savings account paying 5% annual interest when their daughter, Angela, was born. They also deposited $1,000 on each of her birthdays until she was 18 (including her 18th birthday). How much was in the savings account on her 18th birthday (after the last deposit)?

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**BEG.6 (LO 1)** Hugh Curtin borrowed $35,000 on July 1, 2020. This amount plus accrued interest at 8% compounded annually is to be repaid on July 1, 2025. How much will Hugh have to repay on July 1, 2025? *Compute the future value of a single amount.*

**BEG.7 (LO 2)** For each of the following cases, indicate (a) what interest rate columns and (b) what number of periods you would refer to in looking up the discount rate. *Use present value tables.*

**1.** In Table 3 (present value of 1):

| | Annual Rate | Number of Years Involved | Discounts per Year |
|---|---|---|---|
| Case A | 12% | 7 | Annually |
| Case B | 8% | 11 | Annually |
| Case C | 10% | 8 | Semiannually |

**2.** In Table 4 (present value of an annuity of 1):

| | Annual Rate | Number of Years Involved | Number of Payments Involved | Frequency of Payments |
|---|---|---|---|---|
| Case A | 10% | 20 | 20 | Annually |
| Case B | 10% | 7 | 7 | Annually |
| Case C | 6% | 5 | 10 | Semiannually |

**BEG.8 (LO 2)** **a.** What is the present value of $25,000 due 9 periods from now, discounted at 10%? *Determine present values.*

**b.** What is the present value of $25,000 to be received at the end of each of 6 periods, discounted at 9%?

**BEG.9 (LO 2)** Messi Company is considering an investment that will return a lump sum of $900,000 6 years from now. What amount should Messi Company pay for this investment to earn an 8% return? *Compute the present value of a single amount investment.*

**BEG.10 (LO 2)** Lloyd Company earns 6% on an investment that will return $450,000 8 years from now. What is the amount Lloyd should invest now to earn this rate of return? *Compute the present value of a single amount investment.*

**BEG.11 (LO 2)** Robben Company is considering investing in an annuity contract that will return $40,000 annually at the end of each year for 15 years. What amount should Robben Company pay for this investment if it earns an 8% return? *Compute the present value of an annuity investment.*

**BEG.12 (LO 2)** Kaehler Enterprises earns 5% on an investment that pays back $80,000 at the end of each of the next 6 years. What is the amount Kaehler Enterprises invested to earn the 5% rate of return? *Compute the present value of an annual investment.*

**BEG.13 (LO 2)** Dempsey Railroad Co. is about to issue $400,000 of 10-year bonds paying an 11% interest rate, with interest payable semiannually. The discount rate for such securities is 10%. How much can Dempsey expect to receive for the sale of these bonds? *Compute the present value of bonds.*

**BEG.14 (LO 2)** Assume the same information as BEG.13 except that the discount rate is 12% instead of 10%. In this case, how much can Dempsey expect to receive from the sale of these bonds? *Compute the present value of bonds.*

**BEG.15 (LO 2)** Neymar Taco Company receives a $75,000, 6-year note bearing interest of 4% (paid annually) from a customer at a time when the discount rate is 6%. What is the present value of the note received by Neymar? *Compute the present value of a note.*

**BEG.16 (LO 2)** Gleason Enterprises issued 6%, 8-year, $2,500,000 par value bonds that pay interest semiannually on October 1 and April 1. The bonds are dated April 1, 2020, and are issued on that date. The discount rate of interest for such bonds on April 1, 2020, is 8%. What cash proceeds did Gleason receive from issuance of the bonds? *Compute the present value of bonds.*

**BEG.17 (LO 2)** Frazier Company issues a 10%, 5-year mortgage note on January 1, 2020, to obtain financing for new equipment. Land is used as collateral for the note. The terms provide for semiannual installment payments of $48,850. What are the cash proceeds received from the issuance of the note? *Compute the present value of a note.*

**BEG.18 (LO 2)** If Colleen Mooney invests $4,765.50 now and she will receive $12,000 at the end of 12 years, what annual rate of interest will Colleen earn on her investment? (*Hint:* Use Table 3.) *Compute the interest rate on a single amount.*

**BEG.19 (LO 2)** Tim Howard has been offered the opportunity of investing $36,125 now. The investment will earn 11% per year and at the end of that time will return Tim $75,000. How many years must Tim wait to receive $75,000? (*Hint:* Use Table 3.) *Compute the number of periods of a single amount.*

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*Compute the interest rate on an annuity.*

**BEG.20 (LO 2)** Joanne Quick made an investment of $10,271.38. From this investment, she will receive $1,200 annually for the next 15 years starting one year from now. What rate of interest will Joanne's investment be earning for her? (*Hint:* Use Table 4.)

*Compute the number of periods of an annuity.*

**BEG.21 (LO 2)** Kevin Morales invests $7,793.83 now for a series of $1,300 annual returns beginning one year from now. Kevin will earn a return of 9% on the initial investment. How many annual payments of $1,300 will Kevin receive? (*Hint:* Use Table 4.)

*Compute the present value of a machine for purposes of making a purchase decision.*

**BEG.22 (LO 3)** Barney Googal owns a garage and is contemplating purchasing a tire retreading machine for $12,820. After estimating costs and revenues, Barney projects a net cash inflow from the retreading machine of $2,700 annually for 7 years. Barney hopes to earn a return of 9% on such investments. What is the present value of the retreading operation? Should Barney Googal purchase the retreading machine?

*Compute the maximum price to pay for a machine.*

**BEG.23 (LO 3)** Snyder Company is considering purchasing equipment. The equipment will produce the following cash inflows: Year 1, $25,000; Year 2, $30,000; and Year 3, $40,000. Snyder requires a minimum rate of return of 11%. What is the maximum price Snyder should pay for this equipment?

*Determine interest rate.*

**BEG.24 (LO 4)** Carly Simon wishes to invest $18,000 on July 1, 2020, and have it accumulate to $50,000 by July 1, 2030. Use a financial calculator to determine at what exact annual rate of interest Carly must invest the $18,000.

*Determine interest rate.*

**BEG.25 (LO 4)** On July 17, 2019, Keith Urban borrowed $42,000 from his grandfather to open a clothing store. Starting July 17, 2020, Keith has to make 10 equal annual payments of $6,500 each to repay the loan. Use a financial calculator to determine what interest rate Keith is paying.

*Determine interest rate.*

**BEG.26 (LO 4)** As the purchaser of a new house, Carrie Underwood has signed a mortgage note to pay the Nashville National Bank and Trust Co. $8,400 every 6 months for 20 years, at the end of which time she will own the house. At the date the mortgage is signed, the purchase price was $198,000 and Underwood made a down payment of $20,000. The first payment will be made 6 months after the date the mortgage is signed. Using a financial calculator, compute the exact rate of interest earned on the mortgage by the bank.

*Various time value of money situations.*

**BEG.27 (LO 4)** Using a financial calculator, solve for the unknowns in each of the following situations.

**a.** On June 1, 2019, Jennifer Lawrence purchases lakefront property from her neighbor, Josh Hutcherson, and agrees to pay the purchase price in seven payments of $16,000 each, the first payment to be payable June 1, 2020. (Assume that interest compounded at an annual rate of 7.35% is implicit in the payments.) What is the purchase price of the property?

**b.** On January 1, 2019, Gerrard Corporation purchased 200 of the $1,000 face value, 8% coupon, 10-year bonds of Sterling Inc. The bonds mature on January 1, 2029, and pay interest annually beginning January 1, 2020. Gerrard purchased the bonds to yield 10.65%. How much did Gerrard pay for the bonds?

*Various time value of money situations.*

**BEG.28 (LO 4)** Using a financial calculator, provide a solution to each of the following situations.

**a.** Lynn Anglin owes a debt of $42,000 from the purchase of her new sport utility vehicle. The debt bears annual interest of 7.8% compounded monthly. Lynn wishes to pay the debt and interest in equal monthly payments over 8 years, beginning one month hence. What equal monthly payments will pay off the debt and interest?

**b.** On January 1, 2020, Roger Molony offers to buy Dave Feeney's used snowmobile for $8,000, payable in five equal annual installments, which are to include 7.25% interest on the unpaid balance and a portion of the principal. If the first payment is to be made on December 31, 2020, how much will each payment be?

*Determine internal rate of return.*

**BEG.29 (LO 4)** Renolds Corporation is considering two alternative investments in excavating equipment. Investment A requires an initial investment of $184,000, has positive cash flows of $27,500 per year, and has an estimated salvage value of $21,000. Investment B requires an initial investment of $234,000, has positive cash flows of $32,800 per year, and has an estimated salvage value of $19,000. Each piece of equipment is expected to have a 12-year useful life. Use a financial calculator to determine the internal rate of return of each project to decide which is more desirable. (Round to two decimal places, e.g., 9.74%.)

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# Just-in-Time Processing and Activity-Based Costing

## Appendix Preview

Traditional costing systems are not the best answer for every company. Some companies have suspected that their traditional costing systems were masking significant differences in their real cost structure, so they sought a new method of assigning costs. These searches by companies for ways to improve operations and gather more accurate data for decision-making have resulted in the development of powerful management tools, including just-in-time (JIT) processing and activity-based costing (ABC). The objective of this appendix is to explain these two management tools.

## Appendix Outline

**LEARNING OBJECTIVES**

| | |
|---|---|
| **1** Explain just-in-time (JIT) processing and activity-based costing (ABC). | • Just-in-time processing<br>• Activity-based costing |
| **2** Apply activity-based costing to a manufacturer. | • Identify and classify activities and assign overhead to cost pools<br>• Identify cost drivers<br>• Compute activity-based overhead rates<br>• Allocate overhead costs to products<br>• Comparing unit costs<br>• Benefits of ABC<br>• Limitations of ABC |

## Just-in-Time Processing and Activity-Based Costing

**LEARNING OBJECTIVE 1**

Explain just-in-time (JIT) processing and activity-based costing (ABC).

## Just-in-Time Processing

Traditionally, continuous process manufacturing has been based on a **just-in-case** philosophy: Inventories of raw materials are maintained *just in case* some items are of poor quality or a key

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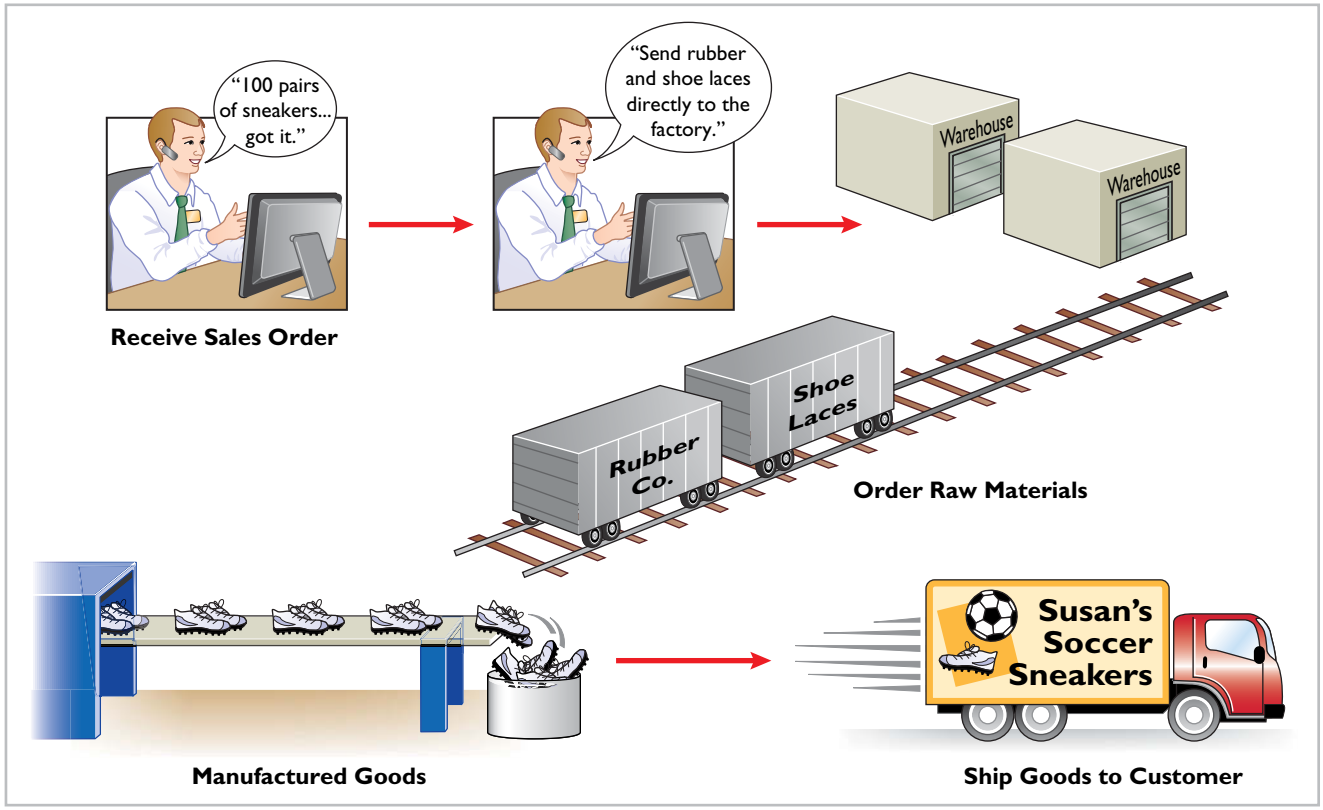
supplier is shut down by a strike. Similarly, subassembly parts are manufactured and stored *just in case* they are needed later in the manufacturing process. Finished goods are completed and stored *just in case* unexpected and rush customer orders are received. This philosophy often results in a "**push approach**," in which raw materials and subassembly parts are pushed through each process. Traditional processing often results in the buildup of extensive manufacturing inventories.

Primarily in response to foreign competition, many U.S. firms have switched to **just-in-time (JIT) processing**. JIT manufacturing is dedicated to having the right amount of materials, parts, or products just as they are needed. JIT first hit the United States in the early 1980s when automobile companies adopted it to compete with foreign automakers. Many companies, including **Dell**, **Caterpillar**, and **Harley-Davidson**, now successfully use JIT. Under JIT processing, companies receive raw materials **just in time** for use in production, they complete subassembly parts **just in time** for use in finished goods, and they complete finished goods **just in time** to be sold. **Illustration H.1** shows the sequence of activities in just-in-time processing.

**ILLUSTRATION H.1** **Just-in-time processing**




## Objective of JIT Processing

A primary objective of JIT is to eliminate all manufacturing inventories. Inventories have an adverse effect on net income because they tie up funds and storage space that could be put to more productive uses. JIT strives to eliminate inventories by using a "**pull approach**" in manufacturing. This approach begins with the customer placing an order with the company, which starts the process of pulling the product through the manufacturing process. A computer at the final workstation sends a signal to the preceding workstation. This signal indicates the exact materials (parts and subassemblies) needed to complete the production of a specified product for a specified time period, such as an eight-hour shift. The next-preceding process, in turn, sends its signal to other processes back up the line. The goal is a smooth continuous flow in the manufacturing process, with no buildup of inventories at any point.

## Elements of JIT Processing

There are three important elements in JIT processing:

1. **Dependable suppliers.** Suppliers must be willing to deliver on short notice exact quantities of raw materials according to precise quality specifications (even including multiple

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deliveries within the same day). Suppliers must also be willing to deliver the raw materials at specified workstations rather than at a central receiving department. This type of purchasing requires constant and direct communication. Such communication is facilitated by an online computer linkage between the company and its suppliers (see **Helpful Hint**).

2. **A multiskilled work force.** Under JIT, machines are often strategically grouped into work cells or workstations. Much of the work is automated. As a result, one worker may operate and maintain several different types of machines.
3. **A total quality control system.** The company must establish total quality control throughout the manufacturing operations (see **Helpful Hint**). Total quality control means **no defects**. Since the pull approach signals only required quantities, any defects at any workstation will shut down operations at subsequent workstations. Total quality control requires continuous monitoring by both line employees and supervisors at each workstation.

**HELPFUL HINT**

**Buyer leverage is important in finding dependable suppliers. Companies like GM and GE have more success than smaller companies.**

**HELPFUL HINT**

**Without its emphasis on quality control, JIT would be impractical or even impossible. In JIT, quality is engineered into the production process.**

### Benefits of JIT Processing

The major benefits of implementing JIT processing are as follows.

1. Significant reduction or elimination of manufacturing inventories.
2. Enhanced product quality.
3. Reduction or elimination of rework costs and inventory storage costs.
4. Production cost savings from the improved flow of goods through the processes.

The effects in many cases have been dramatic. For example, after using JIT for two years, a major division of **Hewlett-Packard** found that work in process inventories (in dollars) were down 82%, scrap/rework costs were down 30%, space utilization improved by 40%, and labor efficiency improved 50%. As indicated, JIT not only reduces inventory but also enables a company to manufacture a better product faster and with less waste.

One of the major accounting benefits of JIT is the elimination of separate raw materials and work in process inventory accounts. These accounts are replaced by **one account**, Raw and In-Process Inventory. All materials and conversion costs are charged to this account. The reduction (or elimination) of in-process inventories results in a simpler computation of equivalent units of production.

## Activity-Based Costing

**Activity-based costing (ABC)** focuses on the activities required to produce a product or perform a service. An ABC system is similar to conventional costing systems in accounting for direct materials and direct labor, but it differs in regard to manufacturing overhead.

A conventional cost system uses a **single unit-level** basis to allocate overhead costs to products. The basis may be direct labor or machine hours used to manufacture the product. The assumption in this approach is that as volume of units produced increases, so does the cost of overhead. However, in recent years the amount of direct labor used in many industries has greatly **decreased**, and total overhead costs resulting from depreciation on expensive equipment and machinery, utilities, repairs, and maintenance have significantly **increased**.

In ABC, the cost of a product is equal to the sum of the costs of all activities performed to manufacture it. ABC recognizes that to have accurate and meaningful cost data, **more than one basis** of allocating activity costs to products is needed.

In selecting the allocation basis, ABC seeks to identify the **cost drivers** that measure the activities performed on the product. A **cost driver** may be any factor or activity that has a direct cause–effect relationship with the resources consumed. **Illustration H.2** lists examples of activities and possible cost drivers.

Two important assumptions must be met in order to obtain accurate product costs under ABC:

1. All overhead costs related to the activity must be driven by the cost driver used to assign costs to products.
2. All overhead costs related to the activity should respond proportionally to changes in the activity level of the cost driver.

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**ILLUSTRATION H.2**

**Activities and cost drivers in ABC**

| Activity | Cost Driver |
|---|---|
| Ordering raw materials | Ordering hours; number of orders |
| Receiving raw materials | Receiving hours; number of shipments |
| Materials handling | Number of requisitions; weight of materials; handling hours |
| Production scheduling | Number of orders |
| Machine setups | Setup hours; number of setups |
| Machining (fabricating, assembling, etc.) | Machine hours |
| Quality control inspections | Number of inspections |
| Factory supervision | Number of employees |

For example, if there is little or no correlation between changes in the cost driver and consumption of the overhead cost, inaccurate product costs are inevitable. We provide an example of the use of ABC later in this appendix.

Activity-based costing may be used with either a job order or a process cost accounting system. The primary benefit of ABC is more accurate and meaningful product costing. Also, improved cost data about an activity can lead to reduced costs for the activity. In sum, ABC makes managers realize that it is **activities**, and not products, that determine the profitability of a company—a realization that should lead to better management decisions.

# Applying Activity-Based Costing

**LEARNING OBJECTIVE 2**

Apply activity-based costing to a manufacturer.

In this section, we present a simple case example that compares activity-based costing with traditional costing. It illustrates how ABC eliminates the distortion that can occur in traditional overhead cost allocation. As you study this example, you should understand that ABC does not *replace* an existing job order or process cost system. What ABC does is to segregate overhead into various cost pools in an effort to provide more accurate cost information. As a result, ABC supplements—rather than replaces—these cost systems.

Assume that Atlas Company produces two abdominal fitness products—the Ab Bench and the Ab Coaster. Each year, the company produces 25,000 Ab Benches but only 5,000 Ab Coasters. Each unit produced requires one hour of direct labor, for a total of 30,000 labor hours (25,000 + 5,000). The direct labor cost is $12 per unit for each product. The direct materials cost per unit is $40 for the Ab Bench and $30 for the Ab Coaster.

Atlas also expects to incur annual manufacturing overhead costs of $900,000. Atlas allocates overhead using a single predetermined overhead rate based on the 30,000 direct labor hours it expects to use. Thus, the predetermined overhead rate is $30 per direct labor hour ($900,000 / 30,000 direct labor hours).

Since both products require one direct labor hour per unit, both products are allocated overhead costs of $30 per unit under traditional costing. **Illustration H.3** shows the total unit costs for the Ab Bench and the Ab Coaster.

With this information, we can now calculate unit costs under ABC for the Ab Bench and the Ab Coaster. Activity-based costing involves the following four steps.

1. **Identify and classify the activities** involved in the manufacture of specific products and **assign overhead to cost pools**.
2. **Identify the cost driver** that has a strong correlation to the costs accumulated in each cost pool.
3. **Compute the activity-based overhead rate** for each cost pool.
4. **Allocate overhead costs to products** using the overhead rates determined for each cost pool.

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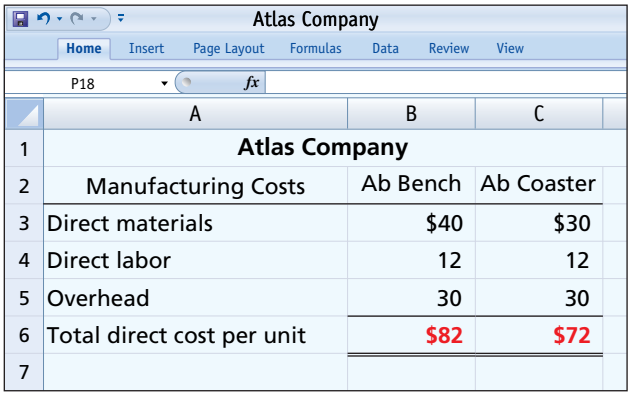



| | A | B | C |
|---|---|---|---|
| 1 | Atlas Company | | |
| 2 | Manufacturing Costs | Ab Bench | Ab Coaster |
| 3 | Direct materials | $40 | $30 |
| 4 | Direct labor | 12 | 12 |
| 5 | Overhead | 30 | 30 |
| 6 | Total direct cost per unit | $82 | $72 |
| 7 | | | |

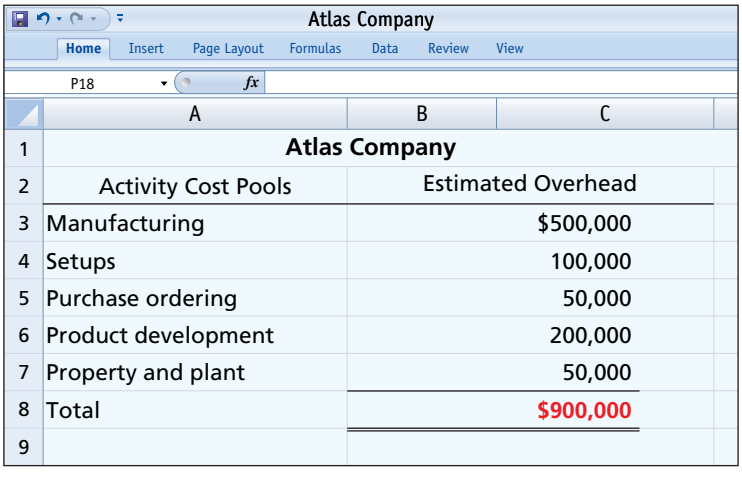
**ILLUSTRATION H.3**

**Total unit costs—traditional costing**

## Identify and Classify Activities and Assign Overhead to Cost Pools (Step 1)

Activity-based costing starts with an analysis of the activities needed to manufacture a product or perform a service. This analysis should identify all resource-consuming activities. It requires documenting every activity undertaken to accomplish a task. Atlas Company identifies five activity cost pools: manufacturing, setups, purchase ordering, product development, and property and plant.

Next, the company assigns overhead costs directly to the appropriate activity cost pool. For example, Atlas assigns all overhead costs directly associated with machine setups (such as salaries, supplies, and depreciation) to the setup cost pool. **Illustration H.4** shows the five cost pools, along with the estimated overhead assigned to each cost pool.




| | A | B | C |
|---|---|---|---|
| 1 | Atlas Company | | |
| 2 | Activity Cost Pools | Estimated Overhead | |
| 3 | Manufacturing | $500,000 | |
| 4 | Setups | 100,000 | |
| 5 | Purchase ordering | 50,000 | |
| 6 | Product development | 200,000 | |
| 7 | Property and plant | 50,000 | |
| 8 | Total | $900,000 | |
| 9 | | | |

**ILLUSTRATION H.4**

**Activity cost pools and estimated overhead**

## Identify Cost Drivers (Step 2)

After costs are assigned to the activity cost pools, the company must identify the cost drivers for each cost pool. The cost driver must accurately measure the actual consumption of the activity by the various products. To achieve accurate costing, a **high degree of correlation** must exist between the cost driver and the actual consumption of the overhead costs in the cost pool.

**Illustration H.5** shows the cost drivers that Atlas Company identifies and their total expected use per activity cost pool.

Availability and ease of obtaining data relating to the cost driver is an important factor that must be considered in its selection.

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**ILLUSTRATION H.5**
**Cost drivers and their expected use**

| Activity Cost Pools | Cost Drivers | Expected Use of Cost Drivers per Activity |
|---|---|---|
| Manufacturing | Machine hours | 50,000 machine hours |
| Setups | Number of setups | 2,000 setups |
| Purchase ordering | Number of purchase orders | 2,500 purchase orders |
| Product development | Products developed | 2 products developed |
| Property and plant | Square footage | 25,000 square feet |

## Compute Activity-Based Overhead Rates (Step 3)

Next, the company computes an **activity-based overhead rate** per cost driver by dividing the estimated overhead per activity by the number of cost drivers expected to be used per activity. Illustration H.6 shows the formula for this computation.

**ILLUSTRATION H.6**
**Formula for computing activity-based overhead rate**

$$\frac{\text{Estimated Overhead per Activity}}{\text{Expected Use of Cost Drivers per Activity}} = \text{Activity-Based Overhead Rate}$$

Atlas Company computes its activity-based overhead rates by using the estimated overhead per activity cost pool, shown in Illustration H.4, and the expected use of cost drivers per activity, shown in Illustration H.5. These computations are presented in Illustration H.7.

**ILLUSTRATION H.7**
**Computation of activity-based overhead rates**

Atlas Company

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| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | Atlas Company | | | | | |
| 2 | Activity Cost Pools | Estimated Overhead | ÷ | Expected Use of Cost Drivers per Activity | = | Activity-Based Overhead Rates |
| 3 | Manufacturing | $500,000 | | 50,000 machine hours | | $10 per machine hour |
| 4 | Setups | 100,000 | | 2,000 setups | | $50 per setup |
| 5 | Purchase ordering | 50,000 | | 2,500 purchase orders | | $20 per order |
| 6 | Product development | 200,000 | | 2 products developed | | $100,000 per product |
| 7 | Plant and property | 50,000 | | 25,000 square feet | | $2 per square foot |
| 8 | Total | $900,000 | | | | |
| 9 | | | | | | |

## Allocate Overhead Costs to Products (Step 4)

In allocating overhead costs, the company must know the expected use of cost drivers **for each product**. Because of its low volume and higher number of components, the Ab Coaster requires more setups and purchase orders than the Ab Bench. Illustration H.8 shows the expected use of cost drivers per product for each of Atlas Company's products.

**ILLUSTRATION H.8** **Expected use of cost drivers per product**

| Activity Cost Pools | Cost Drivers | Expected Use of Cost Drivers per Activity | Expected Use of Cost Drivers per Product | |
|---|---|---|---|---|
| | | | Ab Bench | Ab Coaster |
| Manufacturing | Machine hours | 50,000 machine hours | 30,000 | 20,000 |
| Setups | Number of setups | 2,000 setups | 500 | 1,500 |
| Purchase ordering | Number of purchase orders | 2,500 purchase orders | 750 | 1,750 |
| Product development | Products developed | 2 products developed | 1 | 1 |
| Property and plant | Square feet | 25,000 square feet | 10,000 | 15,000 |

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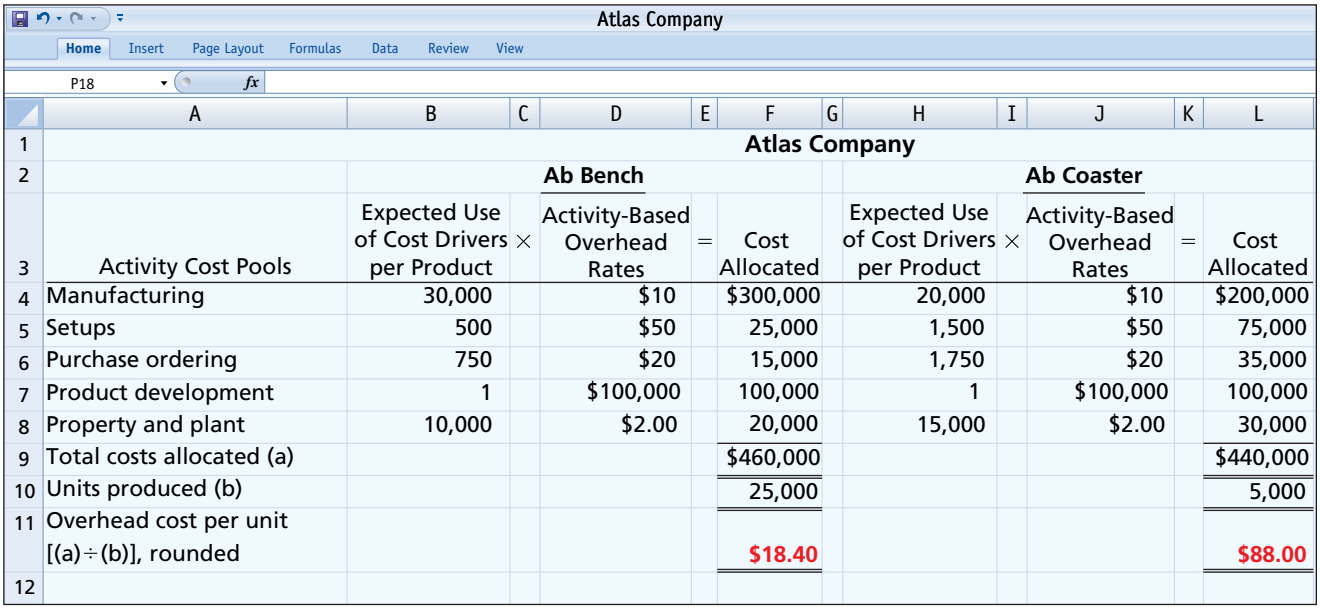
To allocate overhead costs to each product, Atlas multiplies the activity-based overhead rates per cost driver (Illustration H.7) by the number of cost drivers expected to be used per product (Illustration H.8). **Illustration H.9** shows the overhead cost allocated to each product.

**ILLUSTRATION H.9** **Allocation of activity cost pools to products**




| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Atlas Company | | | | | | | | | | | |
| 2 | | Ab Bench | | | | | | Ab Coaster | | | | |
| 3 | Activity Cost Pools | Expected Use of Cost Drivers per Product | × | Activity-Based Overhead Rates | = | Cost Allocated | | Expected Use of Cost Drivers per Product | × | Activity-Based Overhead Rates | = | Cost Allocated |
| 4 | Manufacturing | 30,000 | | $10 | | $300,000 | | 20,000 | | $10 | | $200,000 |
| 5 | Setups | 500 | | $50 | | 25,000 | | 1,500 | | $50 | | 75,000 |
| 6 | Purchase ordering | 750 | | $20 | | 15,000 | | 1,750 | | $20 | | 35,000 |
| 7 | Product development | 1 | | $100,000 | | 100,000 | | 1 | | $100,000 | | 100,000 |
| 8 | Property and plant | 10,000 | | $2.00 | | 20,000 | | 15,000 | | $2.00 | | 30,000 |
| 9 | Total costs allocated (a) | | | | | $460,000 | | | | | | $440,000 |
| 10 | Units produced (b) | | | | | 25,000 | | | | | | 5,000 |
| 11 | Overhead cost per unit [(a)÷(b)], rounded | | | | | $18.40 | | | | | | $88.00 |
| 12 | | | | | | | | | | | | |

Under ABC, the overhead cost per unit is $18.40 for the Ab Bench and $88.00 for the Ab Coaster. We see next how this per unit amount substantially differs from that computed under a traditional costing system.

## Comparing Unit Costs

**Illustration H.10** compares the unit costs for Atlas Company's Ab Bench and Ab Coaster under traditional costing and ABC.

**ILLUSTRATION H.10**
**Comparison of unit product costs**

| | Ab Bench | | Ab Coaster | |
|---|---|---|---|---|
| **Manufacturing Costs** | **Traditional Costing** | **ABC** | **Traditional Costing** | **ABC** |
| Direct materials | $40.00 | $40.00 | $30.00 | $ 30.00 |
| Direct labor | 12.00 | 12.00 | 12.00 | 12.00 |
| Overhead | 30.00 | 18.40 | 30.00 | 88.00 |
| Total direct cost per unit | **$82.00** | **$70.40** | **$72.00** | **$130.00** |
| | **Overstated $11.60** | | **Understated $58.00** | |

The comparison shows that unit costs under traditional costing are different and often misleading. Traditional costing overstates the cost of producing the Ab Bench by $11.60 per unit and understates the cost of producing the Ab Coaster by $58 per unit. These differences are attributable to how Atlas allocates manufacturing overhead across the two systems. Thus, ABC helps Atlas avoid some negative consequences of a traditional costing system, such as overpricing its Ab Benches and thereby possibly losing market share to competitors. Atlas has also been sacrificing profitability by underpricing the Ab Coaster.

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## Benefits of ABC

The primary benefit of ABC is **more accurate product costing**. Here's why:

1. **ABC leads to more cost pools** being used to assign overhead costs to products. Instead of one plantwide pool (or even departmental pools) and a single cost driver, companies use numerous activity cost pools with more relevant cost drivers. Costs are assigned more directly on the basis of the cost drivers used to produce each product.
2. **ABC leads to enhanced control over overhead costs.** Under ABC, companies can trace many overhead costs directly to activities—allowing some indirect costs to be identified as direct costs. Thus, managers have become more aware of their responsibility to control the activities that generate those costs.
3. **ABC leads to better management decisions.** More accurate product costing should contribute to setting selling prices that can help achieve desired product profitability levels. In addition, more accurate cost data could be helpful in deciding whether to make or buy a product part or component, and sometimes even whether to eliminate a product.

Activity-based costing does not change the amount of overhead costs. What it does do is allocate those overhead costs in a more accurate manner. Furthermore, if the scorekeeping is more realistic and more accurate, managers should be able to better understand cost behavior and overall profitability.

## Limitations of ABC

Although ABC systems often provide better product cost data than traditional volume-based systems, there are limitations:

1. **ABC can be expensive to use.** The increased cost of identifying multiple activities and applying numerous cost drivers discourages many companies from using ABC. Activity-based costing systems are more complex than traditional costing systems—sometimes significantly more complex. So companies must ask, is the cost of implementation greater than the benefit of greater accuracy? Sometimes it may be. For some companies, there may be no need to consider ABC at all because their existing system is sufficient. If the costs of ABC outweigh the benefits, then the company should not implement ABC.
2. **Some arbitrary allocations continue.** Even though more overhead costs can be assigned directly to products through ABC's multiple activity cost pools, certain overhead costs remain to be allocated by means of some arbitrary volume-based cost driver such as labor or machine hours.

# Review

## Learning Objectives Review

### 1 Explain just-in-time (JIT) processing and activity-based costing (ABC).

JIT is a manufacturing technique dedicated to producing the right products at the right time as needed. One of the principal accounting effects is that a Raw and In-Process Inventory account replaces both the raw materials and work in process inventory accounts. ABC is a method of product costing that focuses on the activities performed to produce products. It assigns the cost of the activities to products by using cost drivers that measure the activities performed. The primary objective of ABC is accurate and meaningful product costs.

### 2 Apply activity-based costing to a manufacturer.

In applying ABC, it is necessary to compute the overhead rate for each activity by dividing total expected overhead by the total expected usage of the cost driver. The overhead cost for each activity is then assigned to products on the basis of each product's use of the cost driver.

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## Glossary Review

**Activity-based costing (ABC)** A costing system that focuses on the activities required to produce a product or perform a service. (p. H-3).

**Cost driver** Any factor or activity that has a direct cause-effect relationship with the resources consumed. (p. H-3)

**Just-in-time (JIT) processing** A processing system dedicated to having the right amount of materials, parts, or products arrive as they are needed, thereby reducing the amount of inventory. (p. H-2).

## WileyPLUS

Many additional resources are available for practice in WileyPLUS.

## Exercises

**EH.1 (LO 1)** Sam Snead has formulated the following list of statements about contemporary developments in managerial accounting. *JIT processing and ABC.*

1. Just-in-time processing results in a push approach; that is, raw materials are pushed through each process.
2. A primary objective of just-in-time processing is to eliminate all manufacturing inventories.
3. A major disadvantage of just-in-time processing is lower product quality.
4. A primary benefit of activity-based costing is more accurate and meaningful product costing.
5. A major advantage of activity-based costing is that it uses a single unit-level basis, such as direct labor or machine hours, to allocate overhead.

Identify each statement as true or false. If false, indicate how to correct the statement to make it true.

**EH.2 (LO 2)** Mordica Company identifies three activities in its manufacturing process: machine setups, machining, and inspections. Estimated annual overhead cost for each activity is $150,000, $325,000, and $87,500, respectively. The cost driver for each activity and the expected annual usage are number of setups 2,500, machine hours 25,000, and number of inspections 1,750. Compute the overhead rate for each activity. *Compute activity-based overhead rates.*

**EH.3 (LO 2)** **Writing** Major Instrument, Inc. manufactures two products: missile range instruments and space pressure gauges. During April, 50 range instruments and 300 pressure gauges were produced, and overhead costs of $94,500 were estimated. An analysis of estimated overhead costs reveals the following activities. *Compute overhead rates and assign overhead using ABC.*

Excel

| Activities | Cost Drivers | Total Cost |
|---|---|---|
| 1. Materials handling | Number of requisitions | $40,000 |
| 2. Machine setups | Number of setups | 27,500 |
| 3. Quality inspections | Number of inspections | 27,000 |
| | | $94,500 |

The cost driver volume for each product was as follows.

| Cost Drivers | Instruments | Gauges | Total |
|---|---|---|---|
| Number of requisitions | 400 | 600 | 1,000 |
| Number of setups | 200 | 300 | 500 |
| Number of inspections | 200 | 400 | 600 |

### Instructions

**a.** Determine the overhead rate for each activity.

**b.** Assign the manufacturing overhead costs for April to the two products using activity-based costing.

**c.** Write a memorandum to the president of Major Instrument explaining the benefits of activity-based costing.

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*Compute product cost using traditional costing and ABC.*

**EH.4 (LO 2)** Kowalski Company manufactures a number of specialized machine parts. Part Compo-24 uses $35 of direct materials and $15 of direct labor per unit. Kowalski's estimated manufacturing overhead is as follows.

| | |
|---|---|
| Materials handling | $150,000 |
| Machining | 180,000 |
| Factory supervision | 138,000 |
| Total | $468,000 |

Overhead is applied based on direct labor costs, which were estimated at $200,000.

Kowalski is considering adopting activity-based costing. The cost drivers are estimated at:

| Activity | Cost Driver | Expected Use |
|---|---|---|
| Materials handling | Weight of materials | 50,000 pounds |
| Machining | Machine hours | 20,000 hours |
| Factory supervision | Direct labor hours | 12,000 hours |

### Instructions

**a.** Compute the cost of 1,000 units of Compo-24 using the current traditional costing system.

**b.** Compute the cost of 1,000 units of Compo-24 using the proposed activity-based costing system. Assume the 1,000 units use 2,500 pounds of materials, 500 machine hours, and 1,000 direct labor hours.

*Assign overhead to products using ABC and evaluate decision.*

**EH.5 (LO 2)** **Writing** Schultz Electronics manufactures two large-screen television models: the Royale which sells for $1,600, and a new model, the Majestic, which sells for $1,300. The production cost computed per unit under traditional costing for each model in 2020 was as follows.

| Traditional Costing | Royale | Majestic |
|---|---|---|
| Direct materials | $ 700 | $420 |
| Direct labor ($20 per hour) | 120 | 100 |
| Manufacturing overhead ($38 per DLH) | 228 | 190 |
| Total per unit cost | $1,048 | $710 |

In 2020, Schultz manufactured 25,000 units of the Royale and 10,000 units of the Majestic. The overhead rate of $38 per direct labor hour was determined by dividing total expected manufacturing overhead of $7,600,000 by the total direct labor hours (200,000) for the two models.

Under traditional costing, the gross profit on the models was Royale $552 or ($1,600 − $1,048), and Majestic $590 or ($1,300 − $710). Because of this difference, management is considering phasing out the Royale model and increasing the production of the Majestic model.

Before finalizing its decision, management asks Schultz's controller to prepare an analysis using activity-based costing (ABC). The controller accumulates the following information about overhead for the year ended December 31, 2020.

| Activities | Cost Drivers | Estimated Overhead | Expected Use of Cost Drivers | Activity-Based Overhead Rate |
|---|---|---|---|---|
| Purchasing | Number of orders | $1,200,000 | 40,000 | $30/order |
| Machine setups | Number of setups | 900,000 | 18,000 | $50/setup |
| Machining | Machine hours | 4,800,000 | 120,000 | $40/hour |
| Quality control | Number of inspections | 700,000 | 28,000 | $25/inspection |

The cost drivers used for each product were:

| Cost Drivers | Royale | Majestic | Total |
|---|---|---|---|
| Purchase orders | 17,000 | 23,000 | 40,000 |
| Machine setups | 5,000 | 13,000 | 18,000 |
| Machine hours | 75,000 | 45,000 | 120,000 |
| Inspections | 11,000 | 17,000 | 28,000 |

### Instructions

**a.** Assign the total 2020 manufacturing overhead costs to the two products using activity-based costing (ABC) and determine the overhead cost per unit.

**b.** What was the cost per unit and gross profit of each model using ABC?

**c.** Are management's future plans for the two models sound? Explain.

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